

3.0 Description of the Proposed Action and Alternatives

This chapter describes the proposed action and the alternative methods by which the proposed action could be accomplished. Also included is a discussion of the No-Action Alternative. A No-Action Alternative is required by the *National Environmental Policy Act of 1969* (NEPA) and provides a baseline against which the impacts of the other alternatives can be compared.

3.1 Proposed Action

The proposed action for the *Hanford Comprehensive Land-Use Plan Environmental Impact Statement* (HCP EIS) is to develop and implement a comprehensive land-use plan (CLUP) for the Hanford Site. As mandated by 42 U.S.C. 7274k, the land-use plan must address at least a 50-year planning period, although some specific DOE activities such as decommissioning of reactors are expected to take longer. The CLUP would include the following sections which are the minimum parts of a “comprehensive” land-use plan.

- Ⓒ A land-use map with land-use designations. The Record of Decision (ROD) for this HCP EIS would select one of the alternative land-use maps presented in Chapter 3 or would select a land-use map such as the revised Preferred Alternative that combines features of several alternatives.
- Ⓒ A set of definitions for each land-use map designation that apply to all of the alternative land-use maps (not applicable to the No-Action Alternative).
- Ⓒ A set of land-use plan policies (see Chapter 6) that apply to all of the alternative land-use maps (not applicable to the No-Action Alternative).
- Ⓒ A set of procedures for plan implementation (see Chapter 6) that would promote DOE’s responsibility for coordination of land-use decisions with cooperating agencies and consulting Tribal governments (not applicable to the No-Action Alternative).

Once established, this land-use plan would provide a framework for making Hanford Site land-use and facility-use decisions.

3.2 Development of the Alternatives

Alternative land-use plans for the Hanford Site were developed through a cooperative effort with DOE; the Confederated Tribes of the Umatilla Indian Reservation (CTUIR); the Nez Perce Tribe Department of Environmental Restoration and Waste Management (Nez Perce Tribe); the U.S. Department of the Interior (DOI) via the Bureau of Land Management (BLM), Bureau of Reclamation (BoR), and the U.S. Fish and Wildlife Service (USFWS); the Washington Department of Fish and Wildlife (WDFW); the City of Richland; and Benton, Franklin, and Grant counties. Following development of the alternatives, an analysis of potential environmental impacts resulting from proposed land uses associated with each alternative was conducted. With the exception of DOE’s Preferred Alternative and the No-Action Alternative (both of which were written by DOE), the narratives of each alternative do not contain parallel information because each alternative was written by a separate cooperating agency or consulting Tribal government with differing management goals. The results of these impact analyses are presented in Chapter 5.

3.2.1 Involvement of the Cooperating Agencies

During the public comment period on the August 1996 Draft HRA-EIS, several entities formally requested cooperating agency status in developing the Final HCP EIS. These agencies included the DOI, the City of Richland, and Benton and Franklin counties (with whom the State of Washington has placed land-use planning authority under the *Washington Growth Management Act of 1990* [GMA]). Each of these agencies has a legal interest in land-use planning at the Hanford Site because each has some responsibility or interest in managing Hanford lands or dependent resources. From a management perspective, it is also important to understand who orchestrates Columbia River activities (see text box, “*The Managed River*”).

Discussions with the interested agencies were initiated in January 1997 to provide a forum to participate in Hanford Site land-use planning and alternatives development. On March 4, 1997, DOE issued letters formally requesting the participation of these agencies, as well as Grant County and affected Tribal governments, in the development of a Revised Draft HRA-EIS. Later, upon request, a letter was also issued to the USFWS (see Appendix B).

For the convenience of DOE, there are two permits with the USFWS for managing land on the Hanford Site. On the Wahluke Slope, the USFWS manages the Saddle Mountain National Wildlife Refuge (NWR) under a permit signed in 1971. Unless this agreement is dissolved, the Saddle Mountain National Wildlife Refuge would continue to be managed as part of the NWR System under all alternatives described in this chapter. On the Fitzner/Eberhardt Arid Lands Ecology Reserve (ALE Reserve), the USFWS and DOE have a 25-year agreement, signed in 1997, that the USFWS will manage the ALE Reserve consistent with the existing ALE Reserve Management Plan until the new plan is developed. This new Comprehensive Conservation Plan (CCP) is being developed by the USFWS under DOE funding. Through the CCP, the USFWS will identify USFWS proposed management actions. The finished CCP will, in turn, give the USFWS the authority to manage the ALE Reserve as a part of the NWR System. The CCP would be the equivalent of an area management plan (AMP) developed under the guidelines in Chapter 6. Unless the DOE permit is revoked, the USFWS would manage the ALE Reserve and proceed with CCP preparation to identify refuge management actions to bring the ALE Reserve into the NWR System.

The land-use planning sessions with the participating agencies resulted in development of the nine land-use designations, six alternatives (including the No-Action Alternative), land-use

The Managed River

Because ownership is integral to land-use planning, it is important to understand who owns the Columbia River. Within the Hanford Comprehensive Land-Use Plan, DOE, Bureau of Land Management (BLM), Bureau of Reclamation (BoR), U.S. Army Corps of Engineers (USACE), and Washington State Department of Natural Resources all own portions of the Columbia River's islands, riverbed, shoreline, water, or adjoining riverbanks. The Columbia River is central to both commerce and environmental quality for the Northwest.

In addition to ownership, it also helps to know what activities are regulated and who the managers are in the Columbia River Corridor. The Columbia River is a highly managed river. At the top of the Federal responsibilities are Congressional Treaties. There are treaties with Tribal Nations concerning fishing rights, international treaties concerning migratory birds, and specific treaties with Canada that concern river flows, hydropower marketing, and migratory fish stocks. Next is the authority of the Federal agencies. Section 404 of the *Clean Water Act* involves two lead agencies — the U.S. Environmental Protection Agency (EPA), whose regulations implement the Dredged and Fill Material Discharge Permit Program of Section 404, and the USACE, whose regulations also implement the permit program and who control river flows via their dams.

The DOI has several agencies with regulatory authority on the river, including the USFWS for the migratory and listed *Endangered Species Act* plants or animals, the National Park Service while the river is being considered for Wild and Scenic Recreational status, and the BoR which controls river flows via their dams. The U.S. Department of Commerce's National Oceanic and Atmospheric Administration, National Marine Fisheries Service (or “NOAA Fisheries”) administers NOAA's programs that support the migratory salmon and steelhead stocks. The DOE regulates the Columbia River flow through its agency, the Bonneville Power Administration, marketing the

1 planning policies and implementing procedures, the potential environmental impacts analysis,
2 and the structure of the Revised Draft HRA-EIS. The cooperating agency land-use planning
3 sessions are expected to continue through publication of the HCP EIS ROD and implementation
4 of the CLUP (see Chapter 6).

5 6 **3.2.2 Development of the Nine Hanford Site Land-Use Designations**

7
8 The following land-use designations and their definitions were co-written by the
9 cooperating agencies and consulting Tribal governments so alternative land-use plans could be
10 commonly developed and compared. These land-use groupings determined to be suitable for the
11 Hanford Site lands include the following designations:

- 12
13 c Industrial-Exclusive
- 14 c Industrial
- 15 c Agricultural
- 16 c Research and Development
- 17 c High-Intensity Recreation
- 18 c Low-Intensity Recreation
- 19 c Conservation (Mining and Grazing)
- 20 c Conservation (Mining)
- 21 c Preservation.

22
23 These Hanford Site land-use designations and their definitions are presented in Table 3-1.
24 In developing these land-use designation definitions, the cooperating agencies and consulting
25 Tribal governments drew from the Final Report of the Future Site Uses Working Group (Working
26 Group), the August 1996 Draft HRA-EIS, Benton County's GMA planning effort, and the City of
27 Richland's GMA planning effort.

28 29 **3.2.3 Identification of Land-Use Suitability**

30
31 Developing alternatives was preceded by a land-use suitability analysis for a given area of
32 the Hanford Site. A roundtable opportunity-and-constraint discussion on existing Site conditions
33 was shared by the cooperating agencies and consulting Tribal governments. During these
34 discussions, the land-use designations in Table 3-1 were developed. While land-use decisions
35 are fundamentally value-driven decisions, they also should be decisions formed by opportunities
36 and constraints (see text box, "What is an Opportunity or Constraint?"). Existing Site conditions
37 and resources analyzed in the Final HCP EIS include the following:

- 38
39 c Biological
- 40 c Surface water
- 41 c Groundwater
- 42 c Waste sites including vadose zone
- 43 c Geological
- 44 c Cultural
- 45 c Economic (e.g., infrastructure).

46
47 These land-use designations, while based on land-use suitability, also provide insight into
48 a myriad of potential land-use opportunities and reflect the many and varied interests of the
49 cooperating agencies and consulting Tribal governments. Examples of potential land-use
50 activities taking place under each land-use designation are defined in Table 3-1.

Table 3-1. Hanford Site Land-Use Designations.

Land-Use Designation	Definition
Industrial-Exclusive	An area suitable and desirable for treatment, storage, and disposal of hazardous, dangerous, radioactive, and nonradioactive wastes. Includes related activities consistent with Industrial-Exclusive uses.
Industrial	An area suitable and desirable for activities, such as reactor operations, rail, barge transport facilities, mining, manufacturing, food processing, assembly, warehouse, and distribution operations. Includes related activities consistent with Industrial uses.
Agricultural	An area designated for the tilling of soil, raising of crops and livestock, and horticulture for commercial purposes along with all those activities normally and routinely involved in horticulture and the production of crops and livestock. Includes related activities consistent with Agricultural uses.
Research and Development	An area designated for conducting basic or applied research that requires the use of a large-scale or isolated facility, or smaller scale time-limited research conducted in the field or within facilities that consume limited resources. Includes scientific, engineering, technology development, technology transfer, and technology deployment activities to meet regional and national needs. Includes related activities consistent with Research and Development.
High-Intensity Recreation	An area allocated for high-intensity, visitor-serving activities and facilities (commercial and governmental), such as golf courses, recreational vehicle parks, boat launching facilities, Tribal fishing facilities, destination resorts, cultural centers, and museums. Includes related activities consistent with High-Intensity Recreation.
Low-Intensity Recreation	An area allocated for low-intensity, visitor-serving activities and facilities, such as improved recreational trails, primitive boat launching facilities, and permitted campgrounds. Includes related activities consistent with Low-Intensity Recreation.
Conservation (Mining and Grazing)	An area reserved for the management and protection of archeological, cultural, ecological, and natural resources. Limited and managed mining (e.g., quarrying for sand, gravel, basalt, and topsoil for governmental purposes) and grazing could occur as a special use (i.e., a permit would be required) within appropriate areas. Limited public access would be consistent with resource conservation. Includes activities related to Conservation (Mining and Grazing), consistent with the protection of archeological, cultural, ecological, and natural resources.
Conservation (Mining)	An area reserved for the management and protection of archeological, cultural, ecological, and natural resources. Limited and managed mining (e.g., quarrying for sand, gravel, basalt, and topsoil for governmental purposes) could occur as a special use (i.e., a permit would be required) within appropriate areas. Limited public access would be consistent with resource conservation. Includes activities related to Conservation (Mining), consistent with the protection of archeological, cultural, ecological, and natural resources.
Preservation	An area managed for the preservation of archeological, cultural, ecological, and natural resources. No new consumptive uses (i.e., mining or extraction of non-renewable resources) would be allowed within this area. Limited public access would be consistent with resource preservation. Includes activities related to Preservation uses.

1 *Industrial-Exclusive* – Would use existing
2 waste management areas, such as the 200 Area.
3 This land-use designation would preserve DOE
4 control of the continuing remediation activities and
5 use the existing compatible infrastructure required
6 to support activities such as dangerous waste,
7 radioactive waste, and mixed waste treatment,
8 storage, and disposal facilities. The DOE and its
9 contractors, and the Department of Defense and
10 its contractors, could continue their federal waste
11 disposal missions; and the Northwest Low-Level
12 Radioactive Waste Compact could continue using
13 the U.S. Ecology site for commercial radioactive
14 waste. Research supporting the dangerous
15 waste, radioactive waste, and mixed waste
16 treatment, storage, and disposal facilities would be
17 also encouraged within this land-use designation.
18 New uses of radioactive materials such as food
19 irradiation could be developed and packaged for
20 commercial distribution here under this land-use
21 designation. This land-use designation supports
22 the Environmental Protection Agency (EPA)
23 Brownfields Initiative for contaminated areas (EPA
24 1997).

25
26 *Industrial* – Would allow the opportunity for
27 expanded economic growth as a result of an
28 increased and diversified regional marketplace.

29 This land-use designation would use existing compatible infrastructure, including transportation
30 corridors, utilities and availability of energy, and suitable buildings or building space to encourage
31 redevelopment and current DOE missions of research into energy resources development and
32 other research opportunities. Redevelopment could include leasing or selling of idle industrial
33 equipment currently held by DOE such as has been done for the aluminum extrusion presses in
34 the 300 Area or the locomotive machine shop in the 1100 Area, to laboratory facilities and other
35 infrastructure. Leases for industrial facilities such as the Energy Northwest's (formerly the
36 Washington Public Power Supply System, or WPPSS) reactor or a proposed metal smelter
37 cluster would be encouraged. This land-use designation supports the EPA Brownfields Initiative
38 for contaminated areas (EPA 1997).

39
40 *Agricultural* – Would use the economic potential of the Columbia River Basin in eastern
41 Washington (see text box, "*Hanford's Agricultural Opportunity Cost*," Section 3.3.5.3.1). Under
42 the Agricultural land-use designation, the land would be grazed, irrigated, plowed, planted with
43 monocultures (e.g., wheat, grapes, apples, cherries, alfalfa, potatoes, etc.), fallowed, chemically
44 managed (e.g., fertilizers, and pesticides would be applied), burned to control weeds and
45 disease, and otherwise utilized consistent with common regional agricultural practices.

46
47 *Research and Development* – Would allow economic growth potential from research
48 activities associated with the Hanford Science and Technology Mission, the Hanford Site
49 remediation mission, and non-DOE-related research activities including large-scale, multi-
50 decade research and development (R&D) facilities such as the Environmental Molecular
51 Sciences Laboratory (EMSL) and the Laser Interferometer Gravitational Wave Observatory
52 (LIGO), as well as smaller scale and/or time-limited research conducted in the field or within
53 facilities that consume limited resources. Examples include environmental characterization or
54 monitoring studies, site-specific testing of waste management or cleanup technologies, or

What is an Opportunity or Constraint?

In land-use planning, existing conditions offer a mix of "opportunities and constraints." Not all opportunities are equally viable at a specific point in time. And, few constraints are insurmountable given today's engineering and construction capabilities.

For example, shorelines of navigable water bodies typically have *constraints* to development because of potential flooding, geologic instability, bank erosion, wildlife habitat, and cultural resources. However, shorelines also offer excellent *opportunities* for enhancing recreation, cultural resources, fishery habitat, and water quality. These shorelines also are unique in that siting of needed water "dependent" and water "related" developments that cannot be an opportunity (physically located) in upland landscapes.

Landscapes with few or no constraints present the greatest challenges because they represent boundless opportunities with no hint as to their inherent suitability for one land use or another. Consequently, unless a site's suitability for a particular land use is narrowly prescribed by law (e.g., wetlands are protected for biological and water quality needs), the land-use decision is fundamentally value driven. Therefore, when the opportunities and constraints of a particular landscape are analyzed together, the "suitability" for different land uses can be compared and contrasted for an informed and value-driven decision.

1 environmental research in unique areas such as the Columbia River or the ALE Reserve. This |
2 land-use designation would take advantage of existing compatible infrastructure, including
3 transportation corridors, utilities, and availability of energy, suitable buildings or building space,
4 security (i.e., controlled access), and the isolation of the Hanford Site from large population
5 centers.

6
7 *High-Intensity Recreation* – Would use the economic potential of planned multi-activity
8 recreational uses, including destination resorts, golf courses, and recreational vehicle service
9 areas. High-Intensity Recreation is also used to accommodate recreational activities that would
10 require a permanent commitment for infrastructure such as a septic drain field for flush toilets or
11 waste water from fish cleaning stations associated with Tribal-reserved use sites or other public
12 use sites.

13
14 *Low-Intensity Recreation* – Would allow use of the Hanford Site's natural features and the
15 opportunity for human recreational activities (e.g., birding, fishing, hunting, rafting, kayaking,
16 hiking, and biking), which would result in minimal disturbance and require minimal development.
17 Low-Intensity Recreation would require active management practices to enhance or maintain the
18 existing resources, and to minimize or eliminate undesirable or non-native species.

19
20 *Conservation (Mining and Grazing)* – Would enable the extraction of valuable near-
21 surface geologic resources at some locations on the Hanford Site after obtaining NEPA, RCRA,
22 CERCLA, or, where applicable, *State Environmental Policy Act* (SEPA) approval to protect
23 NEPA-sensitive (e.g., biologic, geologic, historic, or cultural) resources. This land-use
24 designation would allow permitted (i.e., conditional) livestock grazing and mining (quarrying) |
25 activities for governmental purposes in specific, limited areas. The Hanford Site has no proven |
26 reserve of any metallic ore bodies; therefore, heap/leach or open-pit mining methods would not |
27 be applicable. Should DOE determine that some or all of the Public Domain lands are surplus to |
28 DOE's needs and release the Public Domain lands back to the DOI, the DOI could then
29 determine if the Tribal treaty language "the privilege of hunting, gathering roots and berries, and
30 pasturing their horses and cattle upon open and unclaimed land" is applicable. Conservation
31 (Mining and Grazing) would afford protection of natural resources; however, other compatible
32 uses, such as recreation, or non-intrusive environmental research activities would also be |
33 allowed provided those activities are consistent with the purposes of the Conservation land-use |
34 designation. Conservation would require active management practices to enhance or maintain |
35 the existing resources, and to minimize or eliminate undesirable or non-native species.

36
37 *Conservation (Mining)* – Would allow the same permitted uses as Conservation (Mining
38 and Grazing), except grazing would be prohibited. This land-use designation reflects the
39 anticipated need for onsite geologic resources to construct surface barriers as required by
40 Hanford Site remediation activities. Conservation would require active management practices to
41 enhance or maintain the existing resources, and to minimize or eliminate undesirable or non-
42 native species.

43
44 *Preservation* – Would protect the unique Hanford Site natural resources and would
45 enhance the benefits resulting from the protection of these resources. Preservation would
46 require active management practices which could include grazing for fire and weed control to
47 preserve the existing resources, and to minimize or eliminate undesirable or non-native species.
48 Commercial grazing of domesticated livestock would not be allowed. An approved wildfire
49 management plan that manages biological resources and protects cultural resources in addition
50 to infrastructure also would be required. Preservation would not preclude all access, but would
51 allow only uses such as nonintrusive environmental research or game-management activities, |
52 provided that those activities are consistent with the purposes of the preservation of natural |
53 resources.

1 A discussion of the affected environment and the existing constraints due to legacy waste
2 contamination and other features is presented in Chapter 4. Chapter 4 also contains Hanford
3 Site maps that illustrate the relevant Site characteristics of the natural environment and individual
4 constraints.

6 **3.2.4 Developing the Environmental Impact Statement Alternatives**

8 Following identification of the opportunities and constraints on the Hanford Site (see
9 Chapter 4), and development of the nine land-use designations, individual alternatives were
10 developed. Based on visions, goals, and objectives of the cooperating agencies and consulting
11 Tribal governments, the land-use designations were applied to specific tracts of land on the
12 Hanford Site. This process resulted in the development of the five (six, including the No-Action)
13 alternatives that are presented and analyzed in this Final HCP EIS.

15 **3.2.5 Incorporation of the Future Site Uses Working Group's Geographic Study Areas 16 into the Alternatives**

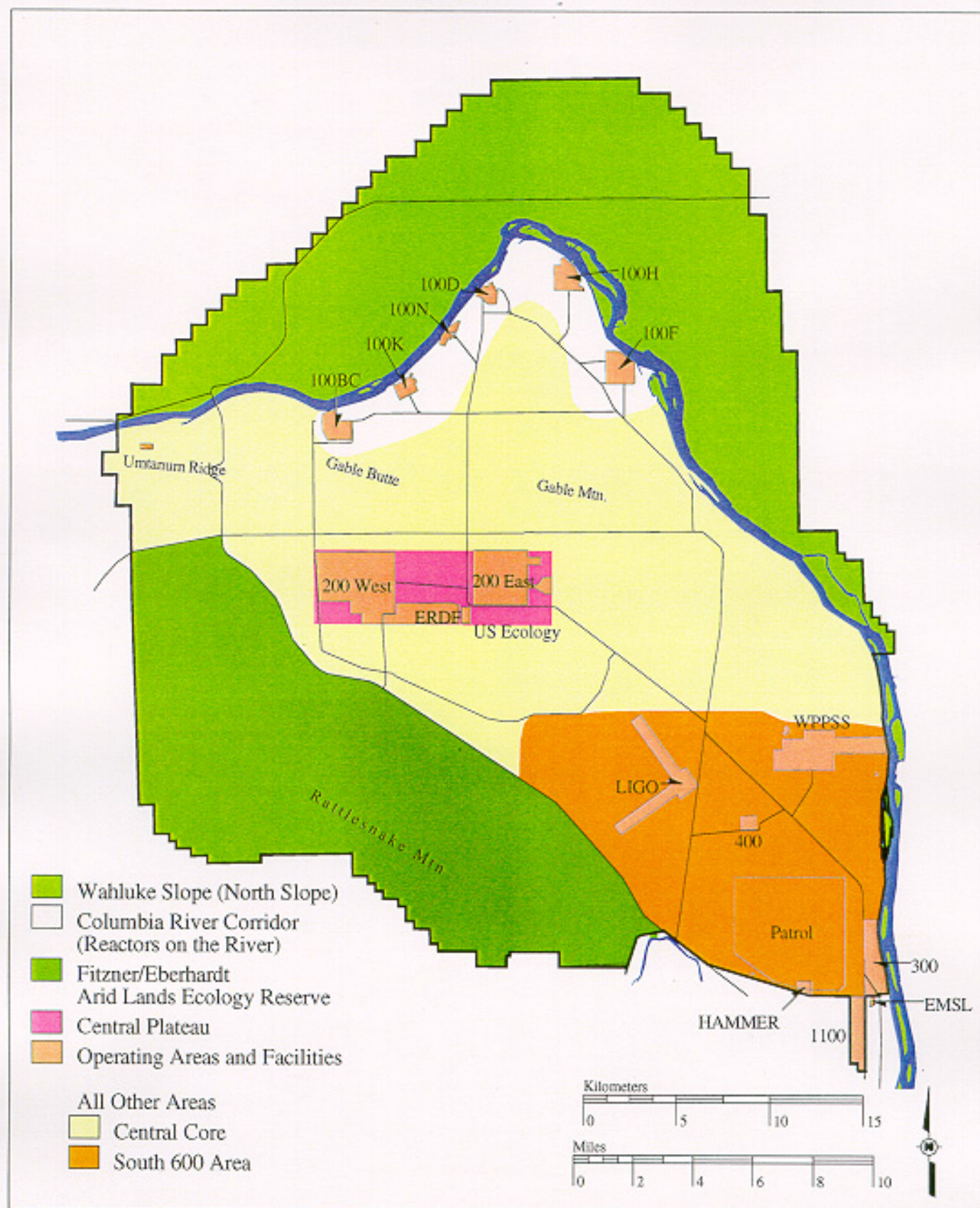
18 On December 22, 1992, the Hanford Future Site Uses Working Group (Working Group)
19 which submitted its report into the official scoping record for the HRA-EIS, provided one of the
20 first coordinated outside looks into the future of the Hanford Site. One of the important
21 contributions of the Working Group was the establishment of six geographic study areas for the
22 Hanford Site for planning purposes (see Figure 3-1). These geographic areas were North of the
23 River, the Columbia River, Reactors on the River, the Central Plateau, All Other Areas, and the
24 ALE Reserve. These original geographic areas are used in this EIS with the following slight
25 modifications:

- 27 C The North of the River geographic area has adopted the local name, the Wahluke
28 Slope.
- 30 C Two geographic areas – the Reactors on the River and the Columbia River – have
31 been combined into a single geographic area, the Columbia River Corridor, consistent
32 with Hanford Advisory Board (HAB) advice.
- 34 C The buffer area associated with the Central Plateau geographic area is not shown;
35 instead, the Central Plateau geographic area represents only the central waste
36 management area and defers the point of compliance for groundwater to the Tri-Party
37 Agreement's processes.
- 39 C The All Other Areas geographic area was divided into the South 600 Area to reflect the
40 clusters of infrastructure located there, and the Central Core that surrounds the
41 Central Plateau but contains less developed infrastructure.

43 **3.2.6 Screening for Reasonable Alternatives**

45 As discussed in the "Memorandum to Agencies: Forty Most Asked Questions Concerning
46 the Council on Environmental Quality's (CEQ) *National Environmental Policy Act* Regulations"
47 (40 FR 18026), reasonable alternatives include the alternatives that are feasible from a common
48 sense, technical, and economic standpoint. Further, the CEQ guidance states that the number
49 of reasonable alternatives considered in detail should represent the full spectrum of alternatives
50 for meeting the purpose and need of the agency, but should not discuss every unique alternative
51 when an unmanageably large number of alternatives would be involved.

Figure 3-1. Geographic Study Areas on the Hanford Site.



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1 An infinite number of land-use alternatives could be developed for the Hanford Site.
2 Consequently, DOE and the cooperating agencies and consulting Tribal governments developed
3 a process for generating a series of alternatives representative of the many stakeholder desires
4 for the future of the Hanford Site lands. This involved considering the relevant factors that
5 influence land use at the Hanford Site. These factors include the following:

- 6
- 7 C Consider public values from scoping and comments on the August 1996 Draft
8 HRA-EIS
- 9
- 10 C Consider land commitments that have been previously made by major Federal actions
11 (NEPA and CERCLA RODs)
- 12
- 13 C Consider current DOE missions, including economic diversification
- 14
- 15 C Consider site characteristics
- 16
- 17 C Consider regional development and ecosystem characteristics
- 18
- 19 C Consider the Working Group's possible future-use options and HAB advice
- 20
- 21 C Consider existing land uses, permits, easements, and current ownerships (i.e., the
22 BLM, BoR, DOE, State of Washington, and Big Bend Alberta Mining Company) in
23 developing proposed land uses
- 24
- 25 C Consider projected changes to the natural and built environment for at least the next
26 50 years
- 27
- 28 C Consider projected land uses for at least 50 years (in the year 2046)
- 29
- 30 C Evaluate projected land uses against the values, goals, and objectives of the
31 expressed public interests and the cooperating agencies and consulting Tribal
32 governments
- 33
- 34 C Consider contamination institutional controls
- 35
- 36 C Honor treaties.
- 37
- 38

39 **3.3 Description of the Alternatives**

40

41 The individual alternative land-use plans developed for this Final HCP EIS, as well as the |
42 No-Action Alternative, are discussed in the following sections. The No-Action and DOE's
43 Preferred Alternatives were written by DOE, Alternative One was written by DOE with input from
44 the USFWS, Alternative Two was written by a representative of the Nez Perce Tribe Department
45 for Environmental Restoration and Waste Management, Alternative Three was written by local
46 government land-use planners (Benton, Franklin and Grant counties, and the City of Richland),
47 and Alternative Four was written by a representative from the Confederated Tribes of the Umatilla
48 Indian Reservation. Differences between alternatives are the result of each respective agency
49 having unique values, goals, and objectives (vision) that the agency applies to the common set of
50 resources and, from which, each agency develops a vision for the Hanford Site. Each alternative
51 discussion begins with the values used to develop that alternative. Agency goals were used to
52 develop the nine land-use designations listed in Table 3-1. These land-use designations and the
53 agencies' values were, in turn, used to generate the six alternatives.

3.3.1 No-Action Alternative

As required by CEQ regulations for implementing NEPA (40 CFR 1502.14[d]), the No-Action Alternative have been included. Question 3 of CEQ's *NEPA's Forty Most Asked Questions* guidance, "Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the *National Environmental Policy Act*" (40 CFR 1500-1508), 46 FR 18026-18038, explains how DOE is to develop the No-Action Alternative:

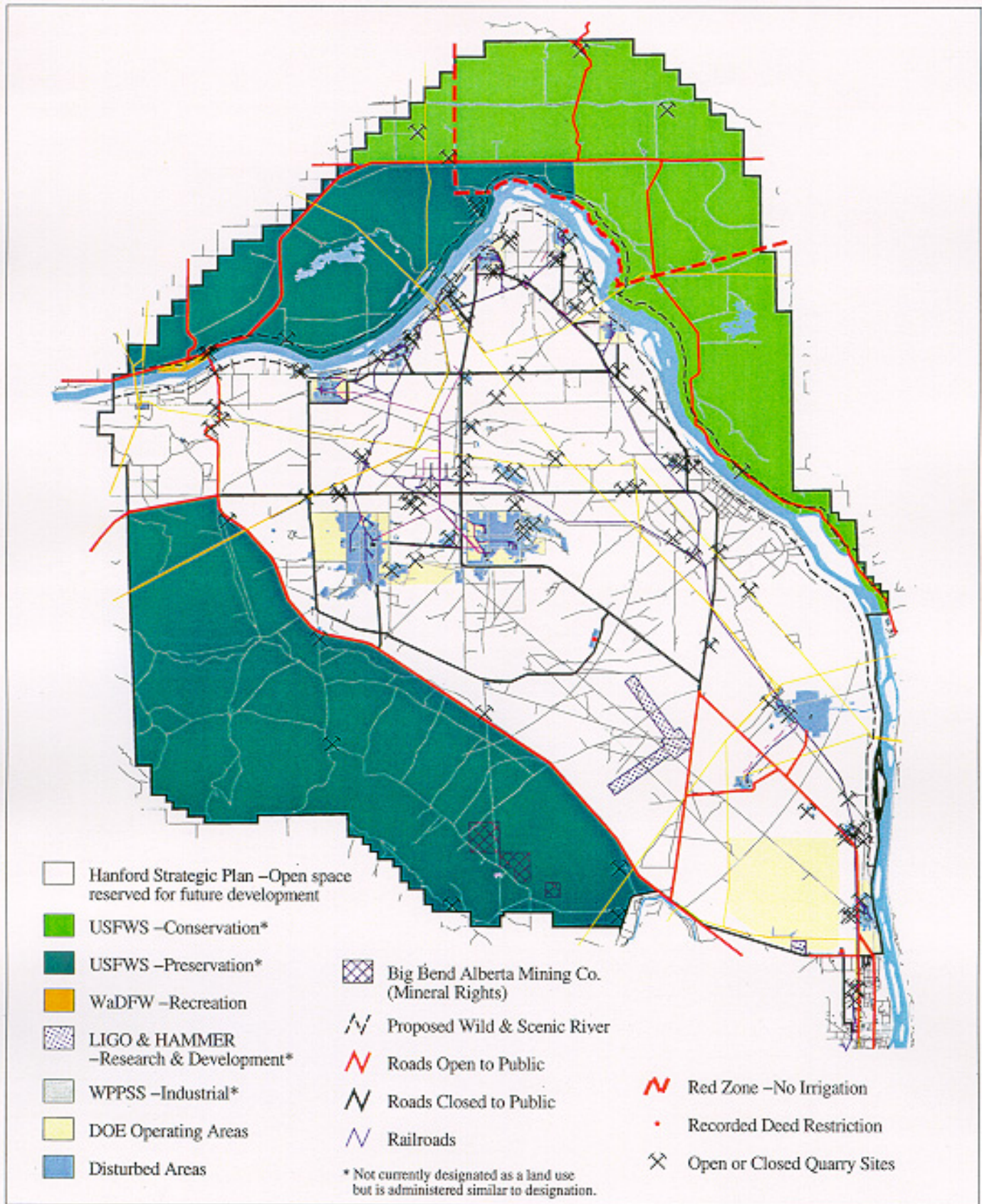
There are two distinct interpretations of "no action" that must be considered, depending on the nature of the proposal being evaluated. The first situation might involve an action such as updating a land management plan where ongoing programs initiated under existing legislation and regulations will continue, even as new plans are developed. In these cases "no action" is "no change" from current management direction or level of management intensity. To construct an alternative that is based on no management at all would be a useless academic exercise. Therefore, the "no action" alternative may be thought of in terms of continuing with the present course of action until the action is changed. Consequently, projected impacts of alternative management schemes would be compared in the EIS to those impacts projected for the existing plan. In this case, alternatives would include management plans of both greater and lesser intensity, especially greater and lesser levels of resource development.

Therefore, in keeping with CEQ guidance, the No-Action Alternative is presented as "no change" from current management direction or level of management intensity. Specifically "no change" means that DOE would not employ the land uses shown in Table 3-1, any of the alternative maps (or combination of alternative maps), and the CLUP policies and implementing procedures in Chapter 6 for managing Hanford Site lands into the future. The No-Action Alternative is DOE's mission-related operation provisions and managerial values of the 1996 *Hanford Strategic Plan* (DOE-RL 1996b) without a framework and implementation procedures to assure the planned use and sustainability of the Site's land and resources. If an alternative is adopted in the ROD, it would simply add more structure to the implementation of the current *Hanford Strategic Plan*.

The No-Action Alternative serves two purposes. First, it serves as a true baseline common to all of the alternatives that presents the current status of land use and land management on the Hanford Site. For this purpose, a baseline no-action map was developed that contains available information defining existing buildings and infrastructure at the Hanford Site. Second, the No-Action Alternative provides a basis for comparing the alternatives against a "no change" in land-use management policy baseline.

To analyze the impacts associated with implementing the no change in land-use management policy/No-Action Alternative, assumptions regarding land-management options were applied. In the No-Action Alternative, specific land-use decisions and designations would be made through the NEPA process on a project-by-project basis as needed. Still there would not be a true land-use designation, land-use policies, or implementing procedures. There would only be areas of the Hanford Site that are currently used or managed for specific purposes guided by administrative agreements (e.g., the ALE Reserve and the Wahluke Slope) and areas of the Hanford Site that are committed to a general land-use because of historical uses and existing NEPA or CERCLA/RCRA ROD commitments but are subject to change by future projects or missions that are unknown at this time. Consequently, potential uses for the Hanford Site lands under the No-Action Alternative are mapped using the policies presented in *Hanford Strategic Plan* (DOE-RL 1996b) (Figure 3-2). Impacts associated with these potential future uses are analyzed and presented in Chapter 5.

Figure 3-2. No-Action Alternative.



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3.3.1.1 Planning Goals, Objectives, and Values (Vision). No publicly reviewed land-management plan has been developed for the Hanford Site since 1975 (ERDA 1975) (see text box, "Permanent Commitments"). In the incorporated by reference *Waste Management Operations, Hanford Reservation, Richland, Washington: Final Environmental Statement* (ERDA 1975), the Section IX.2.3, "Land Use," states:

Continuation of the Hanford Waste Management Operations Program will result in (1) occupancy of land by structures containing radionuclides, and (2) restricted use of land containing radionuclides. The quantity of land committed will remain essentially constant for about 300 years because of the presence of ¹³⁷Cs, ⁹⁰Sr, and transuranium materials in the burial grounds and crib sites unless major recovery and cleanup programs are initiated. After 300 years, the quantity of land required for such purposes will decrease to the lands which contain plutonium or other long-lived transuranics. Recovery of plutonium from stored waste would eliminate the need for long-term control and surveillance.

A summary description of the committed lands is presented in Table IX-2. The areas in that table include appropriate buffer zones for surveillance and prevention of disturbance of the radionuclides by nearby activities such as irrigation agriculture.

Commitment of some of the Hanford lands to waste management makes that land unavailable for other uses. Because there are tens of thousands of acres of similar desert land available throughout the western United States, the dedicated land cannot be considered to have rare characteristics that result in a premium value, such as for residential or industrial use. Ample similar land is available nearby for any such uses foreseen.

Permanent Commitments

The resources that are considered to be committed in an irretrievable and irreversible manner by the Hanford Waste Management Operations are (1) land and materials containing or used for storing radionuclides with a half-life longer than 10 years; (2) labor expended by construction and operating personnel; and (3) materials, such as fuels and chemicals, that are burned, diluted, or consumed during use.

Most land containing fission product radionuclides with long half-lives can be considered unusable for agricultural purposes for centuries. Although most of these radionuclides probably could be separated from the land, reduction of the concentration to a level which would permit unrestricted use undoubtedly would cost more than the value associated with normally expected uses. This land will require a commitment of both people and surveillance equipment until the radioactivity is essentially removed by processing or decay.

Land containing transuranic materials, particularly plutonium, can be considered unusable for any purpose for hundreds of thousands of years. Until any recovery program for the transuranic materials would be completed, this land will require a commitment of both people and surveillance equipment.

About half a million tons of fossil fuels and 50,000 tons of chemicals are expected to be irreversibly consumed by the Hanford Waste Management Operations. Some components of the concrete structures and equipment, as well as about 2,428 ha (6,000 ac) of desert land, are essentially irretrievable due to the practical aspects of reclamation and/or radioactive decontamination. Present operating practices will not require additional land usage for cribs (ERDA 1975).

Table IX-2. Dedicated Waste Management Lands.

General Location	Content^a	Approximate Area (Acres)
100 Areas	Burial Grounds	70
200 Areas	Burial Grounds, Process Buildings, Tank Farms, Cribs, and Ponds	5,100
300 Area	Burial Grounds and Process Ponds	50
600 Area	Burial Grounds	10
Total		5,230 ^b

Table is a quote from the **Waste Management Operations, Hanford Reservation, Richland, Washington: Final Environmental Statement** (ERDA 1538, 1975). Other EIS's and CERCLA RODs have committed even more areas such as ERDF, the 200 West expansion and the 200 East trenches to DOE waste disposal activities.

^a Excludes standby facilities.

^b This is 1.4% of the total Hanford Reservation land area.

In place of any formalized plan, land management at the Hanford Site would be administered using the visions outlined in the *Hanford Strategic Plan* (DOE-RL 1996b), which is not a land-use plan but is instead a DOE mission plan that is periodically updated. The 1996 *Hanford Strategic Plan* details the management direction for the Site. As outlined in the Strategic Plan, Hanford's environmental management, or cleanup mission is to protect the health and safety of the public, workers, and the environment; control hazardous materials; and utilize the assets (i.e., people, infrastructure, site) for other missions. Hanford's Science and Technology mission is to develop and deploy Science and Technology in the service of the nation, including stewardship of the Hanford Site.

Hanford Site managerial values, which are further explained in the 1996 Strategic Plan, are identified below:

- C **Safety** -- The safety and health of our workers and the public will not be compromised. We place a high priority on managing and reducing the risks in our workplace, as well as risks to the public and the environment.
- C **Results** -- We are committed to environmental and scientific excellence. We will meet or exceed the needs and expectations of our customers. Our employees are encouraged to seek creative and innovative solutions and to continuously find ways to improve what we do.
- C **Teamwork** -- We work as a team to accomplish our missions. We regard all concerned parties as essential members of the team and value and plan for their participation. "Win-win" solutions are essential elements of the way we do business. We value the diversity of our employees and all other members of the team.
- C **Integrity** -- We conduct ourselves with the highest standards of professionalism and ethical behavior. We honor our commitments and comply with applicable laws and regulations. We are proper stewards of the taxpayers' interest.

The 1996 *Hanford Strategic Plan* divided the Hanford Site into five distinct geographic study areas, including the Columbia River, Reactors on the River (100 Areas), Central Core, Central Plateau (200 Areas), and the South 600 Area (DOE-RL 1996b). These areas were modified to be consistent with the geographic areas used in this Final HCP EIS. Specifically, the Columbia River and Reactors on the River geographic areas were combined to create the Columbia River Corridor geographic area. The Wahluke Slope and ALE Reserve were not included in the 1996 *Hanford Strategic Plan* but have been included in this alternative, since these areas would remain under DOE authority.

3.3.1.2 Assumptions Regarding Future Use. Specific land-use decisions under the No-Action Alternative would continue to be made through the NEPA or the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology et al. 1989) process on a project-by-project, as-needed basis and without consideration of conformance to a CLUP.

3.3.1.3 Application of the Land-Use Designations.

3.3.1.3.1 The Wahluke Slope. The entire Wahluke Slope is managed for DOE by other agencies by permit. The western portion of the Wahluke Slope is managed by the USFWS as the Saddle Mountain NWR. Current permit conditions require this area to be closed to the public as part of a security zone for the N Reactor (now shut down), and the area would continue to be managed similar to the Preservation designation. This permit also provides protection for the K Basin spent nuclear fuel (SNF) removal project. The USFWS permit provides additional protection to sensitive areas and species of concern. The remainder of this geographic area has been managed by the WDFW and is now designated the Wahluke Wildlife Recreation Area.

In April 1999, the WDFW and the USFWS notified the DOE of their intent to modify their management responsibilities on the Wahluke Slope under the 1971 agreement leaving only a small portion (about 324 ha (800 ac)) northwest of the Vernita bridge under WDFW permit. The USFWS informed the DOE that it intends to allow essentially the same uses permitted by the State of Washington under the WDFW's management of the Wahluke Slope. Therefore, transfer of management of the Wahluke Slope from the WDFW to the USFWS involves only a change in the agency managing the property and does not involve any change in the management activities for the Wahluke Slope. Management of the entire Wahluke Slope by the USFWS as an overlay wildlife refuge is consistent with the 1996 DOI Hanford Reach EIS ROD. The ROD recommended the Wahluke Slope be designated a wildlife refuge and the Hanford Reach a Wild and Scenic River, and that the wildlife refuge be managed by the USFWS.

Consistent with the permit, this land is managed similar to the Conservation (Mining and Grazing) designation. These designations are also consistent with the BoR's Red Zone, in which irrigation is prohibited to minimize slumping of the bluffs into the Columbia River. Under this alternative, limited public access for hunting, fishing, or recreation; permitted mining and grazing activities; and agricultural leases would continue. Existing permits with the USFWS can be revoked by DOE at any time.

3.3.1.3.2 The Columbia River Corridor. The surface water in this geographic area would continue to be managed to allow limited public access and use as a Low-Intensity Recreation area. Access to the Columbia River's islands would remain restricted to provide protection for cultural, aesthetic, biological, and geologic resources. Restrictions that are intended to preserve the unique character of the Hanford Reach portion of the Columbia River (Public Law 100-605) would also remain in effect. Public access to the Reactors on the River area (i.e., the 100 Areas) would remain restricted, which is consistent with current management.

Hazardous and/or dangerous waste has been disposed of at the 183-H Solar Evaporation Basins under the terms of EPA and Ecology regulations. Future use restrictions associated with this parcel of land are to be consistent with the terms of 40 CFR 264.117(c) and *Washington Administrative Code* (WAC) 173-303-610(7)(d). The WAC 173-303-610(7)(d) and 40 CFR 264.117(c) are identical in intent and similar in text and state the following:

Post-closure use of property on or in which [hazardous and/or] dangerous wastes remain after partial or final closure must never be allowed to disturb the integrity of the final cover, liner(s), or any other components of any containment system, or the function of the facility's monitoring system, unless the department finds that the disturbance: (i) Is necessary to the proposed use of the property, and will not increase the potential hazard to human health or the environment; or (ii) Is necessary to reduce a threat to human health or the environment.

A deed restriction has been filed with Benton County for the 183-H Solar Basin RCRA corrective action (BHI 1997) because of residual contamination. Other deed restrictions or covenants for activities that potentially may extend beyond 4.6 m (15 ft) below ground surface are expected for the CERCLA remediation areas (see Figure 4-34).

3.3.1.3.3 The Central Plateau. Lands within the Central Plateau geographic area would continue to be used for the management of radioactive and hazardous waste materials. These management activities would include collection and disposal of radioactive and/or hazardous waste materials that remain onsite, contaminated groundwater management, current offsite commitments, and other related and compatible uses. After incorporating by reference the previous 1975 ERDA 1538 irreversible and irretrievable (I&I) commitments and other documented commitments into this EIS (see Section 1.3), future individual project land-use requirements would be I&I committed through the appropriate NEPA and CERCLA/RCRA/NEPA integrated processes. Deed restrictions or covenants also would be applied to this area through the CERCLA and RCRA processes.

3.3.1.3.4 The All Other Areas. These areas would be available for other Federal programs or leased for non-Federal uses, provided that such uses are consistent with the safety requirements and address the cultural and biological resource issues through DOE's NEPA process. After incorporating by reference the previous 1975 ERDA 1538 irreversible and irretrievable (I&I) commitments and other documented commitments into this EIS (see Section 1.3), future individual project land-use requirements would be I&I committed through the appropriate NEPA and CERCLA/RCRA/NEPA integrated processes. The All Other Areas geographic area would remain under Federal ownership to protect the public from routine or accidental releases of radiological contaminants and/or hazardous materials. The use of protective buffer zones surrounding the waste remediation, processing, and disposal areas is required by DOE Order 151.1, *Comprehensive Emergency Management System* (DOE 1996f), and Occupational Safety and Health Administration (OSHA) regulations 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response" (Site Safety and Control Plan), and OSHA 29 CFR 1910.119, "Process Safety Management (PSM) Rule." These buffer zones limit public exposure to radiological and hazardous chemicals from routine operations and accidents.

A portion of this geographic area (just north of the City of Richland) would be used for industrial purposes. An Industrial use would allow R&D facilities similar to the EMSL. The lands in and adjacent to the 300 and 400 Areas would remain under Federal ownership, but DOE would be able to lease lands for private and public uses (including withdrawn public lands with the owning agency's permission) to support regional industrial and economic development (e.g., Energy Northwest [formerly known as WPPSS]). Other Federal uses would be allowed by permit (e.g., LIGO). This area includes a section south of the 200 Areas that was sold to the State of

Washington for a dangerous waste, non-nuclear disposal site but remains undeveloped. If the state were to develop that property per its Quit Claim Deed (State of Washington 1980), the state would have to obtain appropriate county, state, and Federal permits.

The Horn Rapids Landfill (HRL), operated by the U.S. Department of Energy Richland Operations Office (RL), encompasses approximately 20 ha (50 ac) of the 600 Area. Originally, the landfill was a quarry for sand and gravel. Subsequently, the HRL was used as a landfill for office and construction waste, asbestos, sewage sludge, fly ash, and reportedly numerous drums of unidentified organic liquids. Consistent with EPA recommendations for operators of landfills that handle asbestos, fencing and warning signs have been erected around the perimeter of the HRL to control public access. The HRL has been remediated under the terms of the 1100 Area CERCLA ROD. Future-use restrictions associated with this parcel of land as an asbestos-containing landfill are to be consistent with the terms of 40 CFR 61.151. In general, for the purposes of restrictions on land uses, 40 CFR 61.151 indicates that a notation must be made on the deed or covenant notifying a potential purchaser that the land has been used for asbestos-containing waste material. A deed restriction for asbestos has been filed with Benton County for the HRL. Other deed restrictions or covenants would likely be applied to this area through the CERCLA and RCRA processes.

The DOE's transfer of the 1100 Area to the Port of Benton for economic development was approved through an interim action environmental assessment. The DOE prepared an environmental assessment that resulted in a finding of no significant impact (FONSI) on August 27, 1998, transferring the 1100 Area and the Southern rail connection to the Port of Benton (DOE/RL EA-1260). Although the 1100 Area is no longer under DOE control, it is included in this EIS to support the local governments with their SEPA EIS analyses of the Hanford sub-area of Benton County under the State of Washington's Growth Management Act.

The Port of Benton officially took ownership and control of the "1100 Area" (consisting of 318 ha [786 ac], 26 buildings, and 26 km [16 mi] of rail tract) on October 1, 1998. Together with the Washington State Department of Transportation and Legislature Transportation Committee, the Port of Benton is funding a major study (\$600,000) to determine the feasibility of reconnecting the Hanford main rail line to Ellensburg, Washington, as it was in the 1970s, as an alternative route for Yakima Valley rail traffic flowing between the Puget Sound and the Tri-Cities. The current Yakima Valley route passes directly through all the cities in the Valley, including the cities of Yakima and Kennewick, which have plans to develop their downtown areas to be more people friendly.

Specifically, the Port of Benton has expressed a desire to use the Hanford rail system and extend the current system upriver where there is currently only an abandoned railroad grade. Provisions for the reconnection would be made in DOE's permit to the USFWS for management of the Riverlands. The DOE Preferred Alternative would not hinder the rail option because it would be considered a pre-existing, nonconforming use (see Chapter 6). At this time, DOE has no plans to maintain the northern portions of the existing rail line.

3.3.1.3.5 The Fitzner/Eberhardt Arid Lands Ecology Reserve (ALE Reserve). The ALE Reserve geographic area would continue to be managed similar to the Preservation designation in accordance with the Rattlesnake Hills Research Natural Area designation and the USFWS permit. Big Bend Alberta Mining Company holds mineral rights on about 5 km² (2 mi²) under the southern portion of the ALE Reserve (see Section 4.2.3.1). The USFWS and DOE have a 25-year agreement signed in 1997 that the USFWS will manage the ALE Reserve consistent with the existing ALE Management Plan until the new plan is developed. This new Comprehensive Conservation Plan (CCP) is being developed by the USFWS under DOE funding. Through the CCP, the USFWS will identify USFWS proposed management actions.

The CCP will give the USFWS the authority to manage the ALE Reserve as a part of the NWR System. The CCP would be the equivalent of an area management plan (AMP) developed under the guidelines in Chapter 6. Unless the DOE permit is revoked, the USFWS would manage the ALE Reserve and proceed with CCP preparation to identify refuge management actions that could bring the ALE Reserve into the NWR System.

Currently, persons wishing to visit the ALE Reserve must first contact an appropriate staff member of either DOE or the USFWS.

3.3.2 The Agency's (DOE's) Preferred Alternative

The CEQ requires an agency to “. . . identify the agency's Preferred Alternative if one or more exists, in the draft statement, and identify such alternative in the final statement . . . (40 CFR 1502.14[e]).” In the development of the Preferred Alternative, DOE took into account its role as the long-term caretaker for the Site for at least the next 50 years. The DOE used information from the Hanford Geographic Information System (HGIS) and Waste Information Data System (WIDS) databases. Information considered by DOE includes:

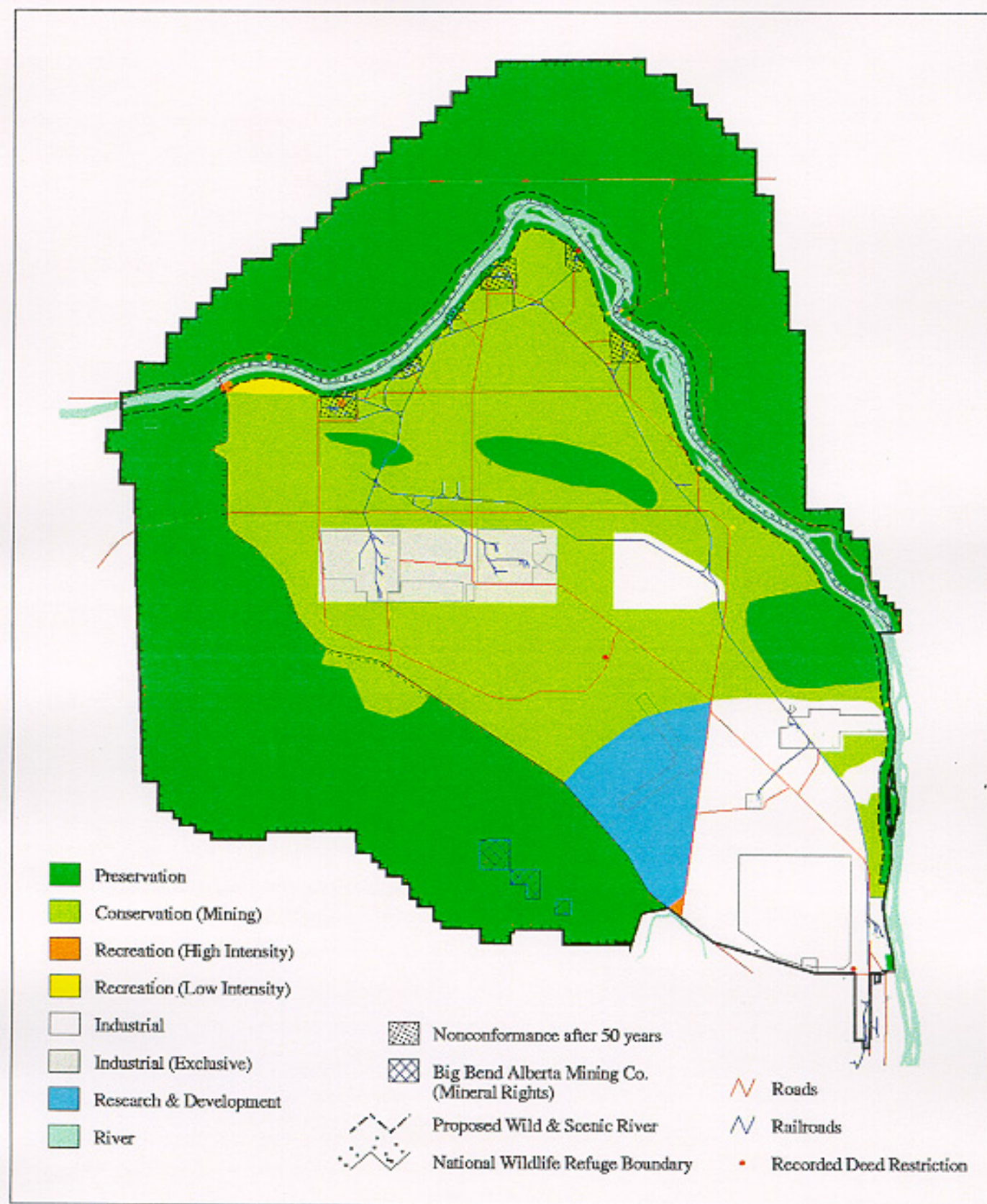
- All surface waste sites, including those remediated (Figure 4-34)
- Groundwater contaminants and flow direction (Figures 4-15, 4-35, and 4-36)
- Cultural and biological resources (Figure 4-27)
- Exclusive-use zones (EUZs) and emergency planning zones (EPZs) associated with DOE and other Hanford activities (e.g., Energy Northwest's nuclear power reactor, U.S. Ecology's low-level waste [LLW] disposal site, LIGO, etc.) (Figure 4-37).

The DOE believes that the Preferred Alternative would fulfill the statutory mission and responsibilities of the agency and give adequate consideration to economic, environmental, technical, and other factors.

3.3.2.1 Planning Goals, Objectives, and Values (Vision). Much like the No-Action Alternative, DOE's Preferred Alternative was developed based on policies that are consistent with the 1996 *Hanford Strategic Plan* (DOE-RL 1996b). However, unlike the No-Action Alternative, DOE's Preferred Alternative would establish policies and implementing procedures that would place Hanford's land-use planning decisions in a regional context.

The DOE has identified the map alternative presented in Figure 3-3 and the land-use policies and implementing procedures of Chapter 6 as the Agency's (DOE's) Preferred Alternative. The DOE's Preferred Alternative represents land-management values, goals, and objectives of DOE for at least the next 50 years. It also represents a multiple-use theme of Industrial-Exclusive, Industrial, Research and Development, High-Intensity Recreation, Low-Intensity Recreation, Conservation (Mining), and Preservation land uses that have been identified by the public, cooperating agencies, and consulting Tribal governments as being important to the region.

1
2
3
Figure 3-3. DOE's Preferred Alternative.



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3.3.2.2 Assumptions Regarding Future Use. The assumptions used to develop DOE's Preferred Alternative are as follows:

- C DOE, as a Federal agency, has a Trust responsibility to protect Tribal interests.
- C DOE has a responsibility to consult with and recognize the interests of the cooperating agencies. The DOE continues to support DOL's proposal to expand the Saddle Mountain NWR to include all of the Wahluke Slope, consistent with the 1994 Hanford Reach EIS and 1996 Hanford Reach ROD.
- C DOE will support economic transition and potential industrial development by the City of Richland or the Port of Benton by encouraging the use of existing utility infrastructure on the Hanford Site.
- C Other entities will ask for Hanford's resources and lands.
- C The public will continue to support protection of cultural and natural resources on the Site, especially on the Wahluke Slope, the Columbia River Corridor, the McGee Ranch, and the ALE Reserve.
- C Mining of onsite geologic materials will be needed to construct surface barriers as required by Hanford Site remediation activities.
- C Remediation of the Site will continue and, where necessary, the institutional controls currently in place will continue to be required at some level for at least the next 50 years. Institutional controls are transferrable and can be shared with other governmental agencies.
- C Plutonium production reactor blocks will remain in the 100 Areas throughout the planning period and will be considered a pre-existing, nonconforming use.
- C Vadose zone contamination will persist in the All Other Areas, Central Plateau, and 100 Area. Contaminated groundwater will remain unremediated in the All Other Areas, Central Plateau, and 100 Area.
- C The public will support preservation of the Manhattan Project's historical legacy and development of a High-Intensity Recreation area, consistent with the B Reactor Museum proposal.
- C The public will support access to the Columbia River for recreational activities and public restrictions consistent with the protection of cultural and biological resources.
- C Areas will be set aside specifically for R&D projects.
- C Sufficient area will be retained to support current and expected DOE facility safety authorization basis.

Planning for Possible Future Missions

The Preferred Alternative identifies lands required to support DOE's current Environmental Management and Science and Technology missions at the Hanford Site, as well as lands for future industrial development by the City of Richland and the Port of Benton. The DOE is proposing that additional lands be maintained under the Industrial land-use designation in areas where existing infrastructure is available and other compatible uses exist. The DOE believes it is prudent to retain land under the Industrial land-use designation to support possible future missions, rather than convert the land to the Conservation or Preservation land-use designation at this time. This would avoid possible conflicts with future missions. The DOE anticipates that the need for land under the Industrial land-use designation would continue to be evaluated during future planning efforts, which may result in conversion of some lands to the Conservation, Preservation, or other land-use designations.

- C An adequate land base and utility infrastructure will be maintained to support possible industrial development associated with future DOE missions.

3.3.2.3 Application of the Land-Use Designations. Land-use designations identified for DOE's Preferred Alternative are Industrial-Exclusive, Industrial, Research and Development, High-Intensity Recreation, Low-Intensity Recreation, Conservation (Mining), and Preservation (see text box, "Planning for Possible Future Missions," and Figure 3-3).

3.3.2.3.1 The Wahluke Slope. Recently the Wahluke Slope was administered for wildlife and recreation as the Saddle Mountain NWR and the Wahluke Wildlife State Recreation Area under permits granted by DOE to the USFWS and WDFW, respectively. In April 1999, the WDFW and the USFWS notified the DOE of their intent to modify their management responsibilities on the Wahluke Slope under the 1971 agreement leaving only a small portion (about 324 ha (800 ac)) northwest of the Vernita bridge under WDFW permit. The USFWS informed the DOE that it intends to allow essentially the same uses permitted by the State of Washington under the WDFW's management of the Wahluke Slope. Therefore, transfer of management of the Wahluke Slope from the WDFW to the USFWS involves only a change in the agency managing the property and does not involve any change in the management activities for the Wahluke Slope. Management of the entire Wahluke Slope by the USFWS as an overlay wildlife refuge is consistent with the 1996 DOI Hanford Reach EIS ROD. The ROD recommended the Wahluke Slope be designated a wildlife refuge and the Hanford Reach a Wild and Scenic River, and that the wildlife refuge be managed by the USFWS.

The DOE's Preferred Alternative would expand the existing Saddle Mountain National Wildlife as an overlay wildlife refuge to include all of the Wahluke Slope consolidating management of the Wahluke Slope under the USFWS, consistent with the Hanford Reach EIS's ROD (DOI 1996). An overlay refuge is one where the land belongs to one or more Federal agency, but it is managed by the USFWS.

The entire Wahluke Slope would be designated Preservation, with the exceptions near the Columbia River as discussed in the Columbia River Corridor section below. The major reason for designating this area as Preservation would be to provide protection for sensitive areas or species of concern (e.g., wetlands, sand dunes, steep slopes, or the White Bluffs) from impacts associated with intensive land-disturbing activities.

A CCP (see Area Management Plans, Chapter 6) for the Wahluke Slope would be developed by USFWS in accordance with the *National Wildlife Refuge System Improvement Act of 1997*. This Act provides significant guidance for management and public use of refuges allowing for wildlife-dependent recreation uses such as hunting, fishing, wildlife observation and photography, and environmental education and interpretation. The USFWS would consult with DOE during the development of this plan to ensure necessary and appropriate buffer zones for ongoing and potential future missions at the Hanford Site.

3.3.2.3.2 The Columbia River Corridor. The Columbia River Corridor has historically contained reactors and associated buildings to support Hanford's former defense production and energy research missions. Nevertheless, remediation planning documents, public statements of advisory groups, and such planning documents as the *Environmental Impact Statement: The Decommissioning of Eight Surplus Reactors* (DOE 1992a) have determined that remediation and restoration of the Columbia River Corridor would return the corridor to a nondeveloped, natural condition. Restrictions on certain activities may continue to be necessary to prevent the mobilization of contaminants, the most likely example of such restrictions being on activities that discharge water to the soil or excavate below 4.6 m (15 ft). Although the Surplus Reactor NEPA

ROD calls for the reactor buildings to be demolished and the reactor blocks to be moved to the Central Plateau, this action might not take place until 2068 or until a new Tri-Party Agreement milestone is negotiated. As a result, the reactor buildings could remain in the Columbia River Corridor throughout the 50-year-plus planning period addressed by the HCP EIS and would be considered a pre-existing nonconformance into the future.

The Columbia River Corridor would include High-Intensity Recreation, Low-Intensity Recreation, Conservation (Mining), and Preservation land-use designations. The river islands and a quarter-mile buffer zone would be designated as Preservation to protect cultural and ecological resources. Those islands not in Benton County would be included in the Refuge.

C Four sites, away from existing contamination, would be designated High-Intensity Recreation to support visitor-serving activities and facilities development. The B Reactor would be converted into a museum and the surrounding area would be available for museum-support facilities (see text box, "*B Reactor Museum Proposal*"). The High-Intensity Recreation area near Vernita Bridge (where the current Washington State rest stop is located) would be expanded across State Highway 240 and to the south to include a boat ramp and other visitor-serving facilities. Two areas on the Wahluke Slope would be designated as High-Intensity Recreation for potential exclusive Tribal fishing villages.

C Six areas would be designated for Low-Intensity Recreation. The area west of the B Reactor would be used as a corridor between the High-Intensity Recreation areas associated with the B Reactor and the Vernita Bridge rest stop and boat ramp. A second area near the D/DR Reactors site would be used for visitor services along a proposed recreational trail as conceptualized on Alternative Three's map. The third and fourth areas, the White Bluffs boat launch, and its counterpart on the Wahluke Slope, are located between the H and F Reactors and would be used for primitive boat launch facilities. A fifth area, near the old Hanford High School, would accommodate visitor facilities and access to the former town site and provide visitor services for hiking and biking trails that could be developed

B Reactor Museum Proposal

Preserving the history of the Hanford Site, and the public's knowledge and understanding of the events that occurred during World War II and the years which followed are the basis for the existence of the B Reactor Museum Association (BRMA). The primary mission of the organization is the long-term preservation of the retired B Reactor at the Hanford Site, and the upgrading of the structure to allow public access and unrestricted tours.

The B Reactor produced the plutonium for the first manmade nuclear explosion – the Trinity test – in New Mexico on July 16, 1945. The second bomb used in World War II contained plutonium produced by B Reactor. That bomb was dropped on Nagasaki on August 9, 1945, and was credited with bringing about the final surrender of Japan and the ending of the war. Plutonium production operation of the B Reactor was permanently stopped in 1968, and the reactor is currently functioning as a controlled-access museum in the 100-B/C Area of the Hanford Site.

As envisioned by the BRMA, the museum would be within the 105-B Reactor building itself, near the east end of a proposed State park. The new park would include the south shore of the Columbia River extending from the Vernita Bridge rest area on State Highway 240, eastward to the 100-B Area (a distance of about 6 km [4 mi]). The park area, the road providing access from Highway 240, and the museum area would be fenced off from the adjacent Hanford area. Ideally, access would be by private automobile, by train across the Hanford Site from Richland, and by boat from the Columbia River.

The B Reactor was entered into the National Register of Historic Places on April 3, 1992, by the National Park Service. Because of this placement, DOE must comply with the *National Historic Preservation Act* (16 U.S.C. 470) prior to taking any action on the historic site. A report, entitled *105-B Reactor Facility Museum Phase I Feasibility Study Report* (BHI 1995a), concluded that the use of the facility as a museum is feasible.

along the Hanford Reach. A sixth site, just north of Energy Northwest (formerly known as WPPSS), would also provide visitor services for recreational trails (e.g., hiking and biking) along the Hanford Reach. On the Wahluke Slope side of the Columbia River, the White Bluffs boat launch would remain managed as is, with a Low-Intensity Recreation designation. A Low-Intensity Recreation designation for the water surface of the Columbia River would be consistent with current management practices and the wishes of many stakeholders in the region.

- C The remainder of land within the Columbia River Corridor outside the quarter-mile buffer zone would be designated for Conservation (Mining). This designation would allow for DOE-permitted mining activities and support BLM's mission of multiple use. Mining would be permitted only in support of governmental missions or to further the biological function of wetlands (i.e., conversion of a gravel pit to a wetland by excavating to groundwater). Should DOE determine that some or all of the withdrawn lands are surplus to DOE's needs and releases the Public Domain lands back to the DOI, then the DOI could determine if the Tribal treaty language – “the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land” – is applicable. A Conservation (Mining) designation would allow DOE to provide protection to sensitive cultural and biological resource areas, while allowing access to geologic resources.

- C A Preservation land-use designation for the Columbia River islands would be consistent with the Hanford Reach EIS ROD (DOI 1996) and would provide additional protection to sensitive cultural areas, wetlands, floodplains, Upper Columbia Run steelhead, and bald eagles from impacts associated with intensive land-disturbing activities. Remediation activities would continue in the 100 Areas (i.e., 100-B/C, 100-KE, 100-KW, 100-N, 100-D, 100-DR, 100-H, and 100-F), and would be considered a pre-existing, nonconforming use in the Preservation land-use designation.

3.3.2.3.3 The Central Plateau. The Central Plateau (200 Areas) geographic area would be designated for Industrial-Exclusive use. An Industrial-Exclusive land-use designation would allow for continued Waste Management operations within the Central Plateau geographic area. This designation would also allow expansion of existing facilities or development of new compatible facilities. Designating the Central Plateau as Industrial-Exclusive would be consistent with the Working Group's recommendations, current DOE management practice, other governments' recommendations, and many public stakeholder values throughout the region.

To keep the 1975 I&I commitments (see text box in Section 3.3.1.1) and to help maintain the current Waste Management mission, there have been several Notices of Deed Restriction placed with the Benton County Assessor's Office and the Benton County Planning Office. The No-Action Alternative (Figure 3-2) shows where these Notice of Deed Restrictions have been placed across the Hanford Site. They are currently being used mainly for asbestos left in landfills (e.g., the HRL and the Central Waste Complex Landfill) and concrete structures that were surface contaminated (e.g., the 183-H Solar Basins) (BHI 1997). As remediation continues, DOE expects to file more restrictions that would institutionalize the 5-m (15-ft) depth restriction for excavation in the 100 Areas CERCLA RODs, the Industrial land-use restriction CERCLA ROD in the 300 Area, the expected Industrial land-use RODs for the Central Plateau, and point-of-compliance boundaries for groundwater remediation or LLW disposal facility performance

assessment purposes. After incorporating by reference the previous 1975 ERDA 1538 irreversible and irretrievable (I&I) commitments and other documented commitments into this EIS (see Section 1.3), future individual project land-use requirements would be I&I committed through the appropriate NEPA and CERCLA/RCRA/NEPA integrated processes.

3.3.2.3.4 The All Other Areas. Within the All Other Areas geographic area, the Preferred Alternative would include Industrial, Research and Development, High-Intensity Recreation, Low-Intensity Recreation, Conservation, and Preservation land-use designations. The majority of the All Other Areas would be designated Conservation (Mining) to support a possible BLM's mission of multiple uses.

Several areas that would be designated as Conservation (Mining) would be unable to fulfill the designated land use:

- C A Notice of Deed Restriction would be placed in those areas where vadose zone contamination remained in-place, according to the CERCLA ROD or RCRA Closure Permit (e.g., the HRL, Central Waste Complex, 183-H Solar Basins, etc.), foreclosing the mining option.
- C The section of Washington State land that is deed restricted to waste management activities would be designated as Conservation (Mining) consistent with Benton County's Alternative Three (GMA authority) and, therefore, could not fulfill any waste management purpose.

Other land-use designations would introduce new land management priorities into the All Other Areas. These designations and the areas affected are as follows:

- C Two distinct areas, one located east of the 200 Areas (i.e., May Junction) and the other located north of Richland, would be designated for Industrial use to support new DOE missions or economic development. This designation would provide additional industrial development and/or expansion area for current facilities.
- C An area west of State Highway 10 and east of State Highway 240 would be designated for Research and Development to support economic diversification and DOE's Energy Research mission. This area would allow for the development of R&D facilities, such as LIGO, which could require substantial buffer zones for operation. In addition, R&D facilities not requiring large areas for operation would also be located within this area.
- C A small area at the junction of State Highway 10 and State Highway 240 would be designated High Intensity Recreation to allow for visitor serving facilities at the gateway to the Hanford Reach, ALE, Horn Rapids Park and other recreational activities.
- C Gable Mountain, Gable Butte, the area west of State Highway 240 from the Columbia River across Umtanum Ridge to the ALE Reserve, and the active sand dunes areas would be designated for Preservation, which would provide additional protection of these sensitive areas. The extant railroad grade across the Riverlands area would be considered an active permitted infrastructure.

After incorporating by reference the previous 1975 ERDA 1538 irreversible and irretrievable (I&I) commitments and other documented commitments into this EIS (see Section 1.3), future individual project land-use requirements would be I&I committed through the appropriate NEPA and CERCLA/RCRA/NEPA integrated processes.

3.3.2.3.5 The Fitzner/Eberhardt Arid Lands Ecology Reserve (ALE Reserve). Nearly all of the ALE Reserve geographic area would be designated as Preservation. This designation would be consistent with current management practices of the Rattlesnake Hills Research Natural Area and the USFWS permit. A portion of the ALE Reserve would be managed as Conservation (Mining) during the remediation of the Hanford Site as a trade-off developed during the cooperating agencies discussions for preservation of a wildlife corridor through the McGee Ranch and after public comment, the inclusion of the McGee Ranch within the Refuge designation. The wildlife corridor through the McGee Ranch/Umtanum Ridge area had been identified by DOE as the preferred quarry site for basalt rock and silty soil materials that could be required for large waste-management area covers (RCRA caps or the Hanford Barrier) in the Central Plateau. In addition to the wildlife corridor function, the mature shrub-steppe vegetation structure in the McGee Ranch area has greater wildlife value (i.e., BRMaP Levels III and IV) than the cheat grass (BRMaP Level I) in the ALE Reserve quarry site (see Section 5.1.2). The BRMaP (DOE-RL 1996c) levels of concern run from Level I through Level IV, increasing in biological importance as the numbers increase, with Level I being the level of least importance.

3.3.3 Alternative One

3.3.3.1 Planning Goals, Objectives, and Values (Vision).

Alternative One represents a Federal stewardship role for managing national resources on the Hanford Site with the acknowledged consumptive treaty-reserved “right of taking fish at all usual and accustomed places in common with citizens of the Territory; and of erecting temporary (suitable instead of temporary for the CTUIR) buildings for curing.” This does not include the tribal vision of consumptive non-fishing activities by tribal member’s exercising their reserved treaty rights, implicit in Alternatives Two and Four. Specifically these rights are, “the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle (stock instead of horses and cattle for the CTUIR) upon open and unclaimed land” (just unclaimed and not open and unclaimed for the CTUIR). The DOE regards Alternative One as the Environmentally Preferable Alternative.

Environmentally Preferable Alternative

Section 1505.2(b) of CEQ’s NEPA regulations requires that in cases where an EIS has been prepared, the Record of Decision (ROD) must identify all alternatives that were considered, “. . . specifying the alternative or alternatives which were considered to be environmentally preferable.” The environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA’s Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources.

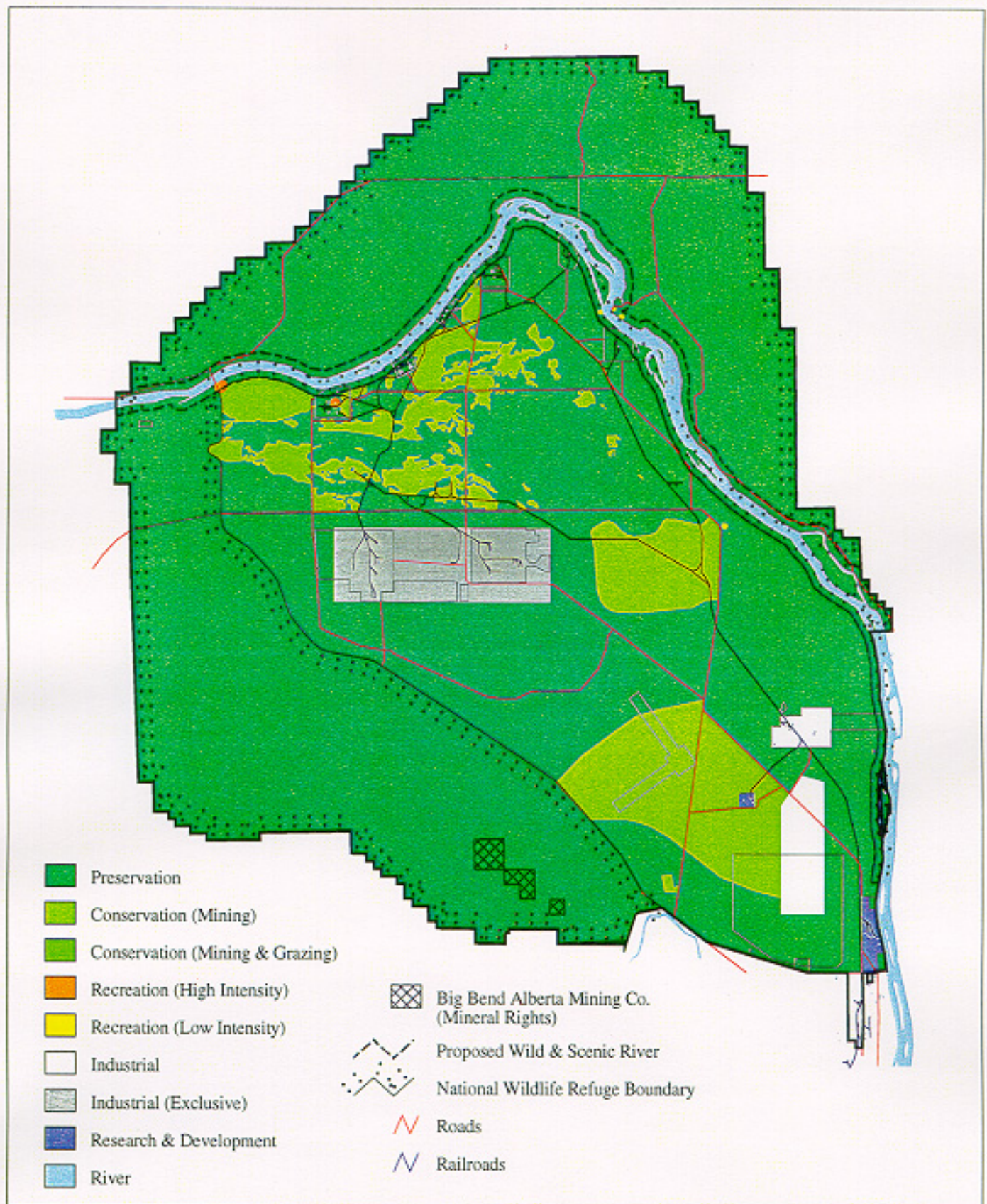
The land-use designations included in Alternative One are presented in Figure 3-4. This alternative considers Hanford resources (i.e., ecological, historic, cultural, and economic resources) in a regional context. Enlarging the existing Federal Saddle Mountain NWR, to include all of the undisturbed natural area north and east of the Columbia River and west of State Highways 24 and 240, is seen as the best way to preserve these resources. The vision of Alternative One is to preserve the Hanford Site shrub-steppe ecosystem by protecting the high-quality habitat that runs contiguously along the west of the Site from the Wahluke Slope to the ALE Reserve, and at the same time, protect the Hanford Reach of the Columbia River.

Alternative One was developed using the seven land-use planning goals listed below:

- C Integrate mission, economic, ecological, social, and cultural factors as stated in the Secretary of Energy’s *Land- and Facility-Use Policy* (DOE 1994b), which includes sustaining the valuable biological resources of the Hanford Site and supporting sustainable economic development.
- C Support the Rattlesnake Hills Research Natural Area, established in 1971.
- C Reduce the inappropriate conversion of undeveloped land into sprawling, low-density development by encouraging siting of high-density development areas.
- C Achieve ecosystem planning based on a regional perspective.

Commonly Identified Goals of Alternative One

- C Encourage economic development and diversification.
- C Protect the Columbia River.
- C Use the Central Plateau wisely for Waste Management.
- C Do no harm during cleanup.
- C Recognize the importance of ecological diversity and recreational opportunities and that the quality of those resources should be maintained or improved as a result of cleanup and Waste Management decisions.
- C Protect the integrity of all biological resources, with specific attention given to rare, threatened, and endangered species and their habitats.

Figure 3-4. Alternative One.

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- C Preserve the lands, sites, and structures of historical, cultural, or archaeological significance on the Hanford Site.
- C Consider the resource needs of the Hanford cleanup program.
- C Encourage the retention of open space.

The land-use designations in Alternative One incorporate the commonly identified goals of the Working Group, Hanford Tank Waste Task Force, and HAB as well as DOE's adoption of these stakeholder values (see text box, "*Commonly Identified Goals of Alternative One*").

The objectives of Alternative One are to promote, through the enlargement of an existing Federal wildlife refuge, the protection and recovery of state and federally listed species, a wide range of fish and wildlife recreational opportunities (see text box, "*Wildlife Viewing in Washington*"), aquatic and terrestrial habitats and associated fish and wildlife populations, and the utilization of the existing infrastructure (especially in the southeast portion of the Site and the Central Plateau) for development. The vision of Alternative One is to conserve the Hanford Site shrub-steppe ecosystem, which provides a sanctuary for River and riparian areas to maintain the high quality of the salmon and steelhead spawning areas, and to maintain a habitat link between the Hanford Site and the Yakima Training Center, which is Washington State's second largest shrub-steppe ecosystem. This would ensure conservation of the region's shrub-steppe heritage for future generations to enjoy.

3.3.3.2 Assumptions Regarding Future Use. The assumptions used to develop Alternative One are as follows:

- Existing hazardous waste and ongoing remedial actions will require DOE to maintain control of portions of the Site for the proposed planning period.
- DOE control of the Site will be required to provide a safety buffer for the public from unforeseeable accidents that pose health risks to workers and the public (e.g., the Plutonium Reclamation Facility explosion) during the cleanup mission.
- Plutonium production reactor blocks will remain in the 100 Areas throughout the planning period and will be considered a pre-existing, nonconforming use.
- DOE will continue to practice "as low as reasonably achievable" (ALARA) management designed to keep human exposure to a minimum by only approving staff and projects on the Hanford Site necessary for management of radioactive and hazardous wastes. The intent of the ALARA program is to avoid unnecessary exposure and potential risks from radioactive, hazardous, or biological materials to workers, public, and/or the environment. These risks could include unexpected air

Wildlife Viewing in Washington

More than a third of the population in Washington state participates in wildlife viewing and those wildlife watchers spent nearly \$1.7 billion on the pursuit in 1996, according to a 1998 WDFW report.

The "Economic Benefits of Wildlife-Watching Activities in Washington" report found that wildlife watchers spent \$1.1 billion on equipment purchases, \$509 million on trip-related expenses including food and lodging, \$106 million for land-use fees and rentals, and \$59 million for items such as magazines, books, membership dues, and other items.

The popularity of wildlife-viewing activities in Washington translates to:

- S Nearly 8,000 jobs supported by watchable wildlife activities.
- S Destination tourism drawing about 270,000 out-of-state visitors who spent nearly 6 million visitor-days here in 1996.
- S State sales tax proceeds amounting to \$56.9 million.

The growing interest in wildlife viewing prompted WDFW to establish a Watchable Wildlife program in 1997, aimed at providing recreational opportunities to the public, promoting understanding of wildlife habitat needs and linking wildlife conservation and management to economic opportunities in local communities.

releases.

- DOE will find new missions for buildings in the 300 and 400 Areas for exploring new technologies related to the treatment and handling of hazardous waste, developing energy technologies, and other DOE missions. These new missions may be conducted by Federal and non-Federal entities.
- Expansion for future development during the planning period will not exceed historical acreage used by DOE and its predecessors. This projected future development expansion will occur as high-density development to conserve the other natural resources present on the Site.
- Stewardship will be based on the principles of ecosystem management and sustainable development.
- Existing permits and Memoranda of Agreement made by DOE with other entities for land-management purposes will continue, with the exception of the Wahluke State Wildlife Recreation Area, which be terminated to allow management of the expanded Saddle Mountain NWR by the USFWS.
- USFWS will manage the ALE Reserve, McGee Ranch site, Riverlands, and Wahluke State Wildlife Recreation Area.
- The R&D necessary for cleanup will occur in a manner that creates additional private-sector economic development opportunities.
- Quarry sites will support DOE's remediation construction and infrastructure maintenance needs. No commercial use of the quarries will occur during this planning period.

3.3.3.3 Application of the Land-Use Designations. Alternative One land-use designations include Industrial-Exclusive, Industrial, Research and Development, High-Intensity Recreation, Low-Intensity Recreation, Conservation (Mining), and Preservation. The location, shape, and size of the land-use designations were based on analysis of the existing natural and man-made resources (e.g., infrastructure, topography, and biology, etc.) found in Chapter 4 and land-use projects for economic development, which are also found in Chapter 4.

3.3.3.3.1 The Wahluke Slope. The land-use designation for the Wahluke Slope under Alternative One would be Preservation. The Wahluke Slope is currently administered for wildlife and recreation as the Saddle Mountain NWR and the Wahluke Wildlife Recreation Area under permits granted by DOE to the USFWS and WDFW. Management of the Wahluke Slope would be consolidated under the USFWS as a portion of the Saddle Mountain NWR.

The Saddle Mountain NWR would be designated Preservation, which is consistent with the current administered land use. Preservation would provide a protective safety buffer zone for DOE remedial activities in the 100 Areas. These DOE activities are expected to continue for the planning period, and would continue to provide a sanctuary for shrub-steppe dependent species that inhabit the area. Preservation would also prevent activities within the BoR's Red Zone (an area where irrigation is restricted because it accelerates mud slides along the Columbia River) that could jeopardize stability of the White Bluffs. Preservation would not interfere with the BoR's management of the Columbia Basin Project's irrigation wasteways because they would be considered a pre-existing, nonconforming use. An agreement would be established by the DOI between its four agencies (i.e., USFWS, BoR, NPS, and BLM) to enable

all to fulfill their Congressionally mandated missions on the Wahluke Slope.

Agriculture (cropland) is a feature of some refuges, and was considered for portions of the Wahluke Slope consistent with currently administered wildlife sharecropping programs (see text box, "*Cropland Management on National Wildlife Refuges*"). Currently, there is a significant amount of privately held agricultural lands in the region that the U.S. Department of Agriculture is protecting (i.e., the lands are not being used for agriculture) for either environmental or cultural reasons under the Conservation Reserve Enhancement Program (CREP) (see Table 3-2). In addition, the markets for apples, potatoes, and wheat are currently soft with the apple industry examining the need to take trees out of production (TCH 1998a).

In consideration of the natural resource trustee's Congressional mandate to preserve and protect endangered ecosystems such as the shrub-steppe, expanding the agricultural base in the region -- while possible under a NWR scenario -- is not considered to be an appropriate use of the Wahluke Slope lands and their dependent fisheries resources.

3.3.3.3.2 The Columbia River Corridor.

Land-use designations for the Columbia River Corridor under Alternative One would include High-Intensity Recreation, Low-Intensity Recreation, Conservation (Mining), and Preservation.

Cropland Management on National Wildlife Refuges

In 1992, estimated cropland in the NWR System was approximately 82,556 ha [204,000 ac] (1.4% of refuge system lands outside of Alaska), down from 8,903 ha (222,000 ac) (1.9% of refuge system lands outside of Alaska) in 1974. Former croplands have been allowed to undergo natural succession, have been planted with desired grasses, trees, or shrubs; or have been converted in some cases to managed moist soil wetland units, according to a USFSW report.

Of the 181 refuges with farming programs in 1989, 129 refuges (and 61,917 ha [153,000 ac]) were farmed by permittees who retained a share of the crop in return for costs incurred to farm the land. On the remaining refuges, USFWS personnel conduct farming operations with government equipment.

Soil preparation, manipulation and treatment practices on refuge croplands are based on sound land-use soil conservation practices. Techniques used include contour farming, cover cropping, windrow planting, sodding waterways, eliminating fall and spring plowing, stubble mulching, and using shallow water retention structures.

On many refuges, crops are systematically rotated and legumes are incorporated with grain crops to improve soil tilth and nutrient content and to reduce weed problems. Biological farming is the preferred farming method on refuges.

Table 3-2. 1997 Regional Conservation Reserve Enhancement Program (CREP) (USDA 1998).

County	Acres	Rental Payment per Acre in 1997	CREP Cost in 1997
Adams County	91,794.00	\$45.45	\$4,172,037.00
Benton County	29,703.00	\$40.63	\$1,206,833.00
Franklin County	32,524.00	\$48.95	\$1,592,050.00
Grant County	25,891.00	\$44.64	\$1,155,774.00
Hanford Region	179,912.00	\$44.92	\$8,126,694.00

The Columbia River islands within the Hanford Site boundary would be designated for Preservation and included in the Saddle Mountain NWR to maintain important areas for wildlife. Wildlife species using these islands include mule deer, American white pelicans, sandhill cranes, waterfowl, and ring-necked pheasant. A significant area of the Upper Columbia River summer/fall-run chinook salmon spawning habitat is located near these islands, as well as

1 potential juvenile rearing habitat for the federally listed Upper Columbia River spring-run chinook
 2 salmon (Endangered listed -3/99), Middle Columbia River steelhead (Threatened listed-3/99), and
 3 Upper Columbia River steelhead (Endangered listed-8/97).
 4

5 The Columbia River Corridor itself includes Low-Intensity Recreation, High-Intensity
 6 Recreation, Conservation (Mining), and Preservation land-use designations. The Low-Intensity
 7 Recreation areas would include an existing unimproved boat ramp on the Benton County side of
 8 the corridor at the White Bluffs. Use of the boat ramp would be restricted to emergency
 9 responses to protect suitable bald eagle nesting habitat. Restrictions would be consistent with
 10 the *Hanford Site Bald Eagle Management Plan* (DOE-RL 1994b). The High-Intensity Recreation
 11 area currently includes an existing highway rest area on the west side of State Highway 240 at
 12 Vernita Bridge. The rest area is leased from DOE by the Washington Department of
 13 Transportation. A boat ramp facility has been proposed east of the highway across from the rest
 14 area on the Benton County side. The Preservation designation would provide protection for
 15 ecologically and culturally sensitive areas being considered for protection under the Wild and
 16 Scenic Recreational River designation (DOI 1996) and would be consistent with the current
 17 management of the Saddle Mountain NWR.
 18

19 The 100 Areas would include High-Intensity Recreation, Conservation (Mining), and
 20 Preservation land-use designations. The B Reactor would be designated High-Intensity
 21 Recreation to allow tourism of the federally registered landmark and would be consistent with the
 22 B Reactor Museum proposal. Radioactive contamination would remain below 4.6 m (15 ft) in the
 23 100 Areas vadose zone. During the planning period for this document (at least the next
 24 50 years), the spent fuel will be removed from the K Basins. Associated environmental risks
 25 were evaluated in the K Basin EIS (DOE 1996b).
 26

27 **3.3.3.3.3 The Central Plateau.** The Central Plateau would include Industrial-Exclusive
 28 and Preservation land-use designations. The Central Plateau includes undeveloped and
 29 uncontaminated land, the majority of which has been designated priority shrub-steppe habitat by
 30 the WDFW. Potential future Hanford Site projects include a full-scale, low-level vitrification plant
 31 and a burial ground for eight reactor cores (DOE 1992a). The remaining undeveloped areas
 32 would be considered sufficient for the preferred regional alternative of DOE's Programmatic
 33 Waste Management EIS (DOE 1997a). Under the Programmatic EIS preferred regional
 34 alternative, the Central Plateau would be committed to waste management from other DOE sites.
 35 Although this land-use designation does not include Research and Development, R&D projects
 36 specific to DOE waste management activities would be allowed. Mitigations for impacts from all
 37 the previously mentioned, and any unforeseeable projects, would be consistent with the Draft
 38 *Hanford Site Biological Resources Management Plan* (BRMaP) (DOE-RL 1996c).
 39

40 Land west of the currently developed 200 West Area within the Central Plateau
 41 geographic area would be designated Preservation. This area contains high-quality mature
 42 sagebrush, which provides essential habitat for shrub-steppe dependent species. This
 43 designation would prevent additional sprawl to the west and encourage siting of new projects
 44 between the 200 East and 200 West Areas.
 45

46 **3.3.3.3.4 The All Other Areas.** The All Other Areas geographic area under Alternative
 47 One would include Industrial, Research and Development, Low-Intensity Recreation,
 48 Conservation (Mining), and Preservation land-use designations. All development (i.e., Industrial,
 49 and Research and Development) would occur south of Energy Northwest (formerly known as
 50 WPPSS), inclusive. This development would include transition of existing facilities in the 1100,
 51 300, and 400 Areas and the Energy Northwest area to potential uses such as high technology
 52 incubators, manufacturing, and medical isotope production. The majority of non-Federal uses
 53 would occur offsite or within a portion of the area identified by the City of Richland's urban growth

1 area (UGA) boundary in the southeast portion of the Site. This reduced UGA would include
2 Industrial and Research and Development. The DOE's industrial needs could also be met within
3 the approximately 5.2 km² (4 mi²) of land identified for industrial use between Energy Northwest
4 and the UGA boundary. This 5.2 km² (4 mi²) area contains low-quality habitat. Just west of the
5 Industrial designation is an extensive tract of seral shrub-steppe habitat which has been
6 designated Conservation (Mining). As the canopy cover increases, this seral shrub-steppe
7 habitat will become more important for shrub-steppe dependent species as additional shrub-
8 steppe habitat is destroyed offsite.
9

10 Wildlife corridors designated as Preservation would be located around this industrial
11 development to allow wildlife movements between the ALE Reserve, the Columbia River, and the
12 Saddle Mountain NWR. Between the western boundary and State Highway 240, a wildlife
13 corridor would run north from the ALE Reserve to the Columbia River. This northwestern wildlife
14 corridor would include the areas known as McGee Ranch and the river lands. Within the
15 southeastern wildlife corridor north of the Yakima River, a small area would be designated
16 Conservation (Mining) to allow potential extraction of geologic materials for use in the 200 Areas
17 remedial efforts. Considering this as a quarry site for basalt and soil provides DOE with the
18 option to designate Gable Mountain, Gable Butte, and West Haven as Preservation because of
19 their significant cultural value; and also to designate, as Preservation, the McGee Ranch site
20 (which is DOE land north and west of Highway 24 and south of the Columbia River). This
21 Preservation designation, including the McGee Ranch site as part of the expansion of the Saddle
22 Mountain NWR, would help preserve and protect an important habitat link between the Hanford
23 Site and the Yakima Training Center.
24

25 **3.3.3.3.5 The Fitzner/Eberhardt Arid Lands Ecology Reserve (ALE Reserve).** The
26 ALE Reserve geographic area would be designated Preservation consistent with the
27 management of the expanded Saddle Mountain NWR. Preservation and management of the ALE
28 Reserve as an expansion of the Saddle Mountain NWR would protect the rare and high-quality
29 shrub-steppe plant communities and unique and rare fauna that reside on this portion of the Site.
30 Many of these plant communities and fauna are found nowhere else in the state of Washington or
31 in the Columbia Basin eco-region. Providing an expanded Saddle Mountain NWR for a biological
32 sanctuary of shrub-steppe dependent species would assist agricultural and industrial
33 development in other areas of the Columbia Basin's shrub-steppe community by partially fulfilling
34 the mandate to preserve species under the *Endangered Species Act of 1973*.

3.3.4 Alternative Two

3.3.4.1 Planning Goals, Objectives, and Values (Vision). Alternative Two presents the vision of the Nez Perce Tribe, Department for Environmental Restoration and Waste Management and incorporates their vision of Federal trust responsibility to the Indian Tribes (Figure 3-5). This vision calls for preservation of the natural and cultural resources at the Hanford Site. Traditional Tribal use is consistent with the Preservation land-use designation. Protection of cultural resources at the Hanford Site is the top priority of Alternative Two. Sharing the Nez Perce Tribe's knowledge and point of view about sacred sites and nature with everyone is vitally important. Cultural resources remain important to the Nez Perce Tribe's way of life and are part of the Tribe's tradition.

The Hanford Site, including the Columbia River, has a history of serving as a gathering place for Indian Nations to hunt, fish, trade, and feast. The Nez Perce have shared and participated in these known ancient and traditional activities with other Tribes when and where there were no fences, boundary lines, or treaties. The Hanford Site is one of the largest areas of land in the Pacific Northwest region that has not been developed, with agriculture being the principal development on surrounding lands. The Hanford Site contains the last nontidal, unimpounded section of the Columbia River in the United States, and the Hanford Reach is the only remaining area on the Columbia River where Chinook salmon still spawn naturally. The ALE Reserve geographic area contains one of the few resident elk herds in the world that inhabit a semi-arid area, and the ALE Reserve is one of the largest remnants of relatively undisturbed shrub-steppe ecosystem in the State of Washington. Approximately 50 species of animals that are classified as "sensitive species" currently reside at the Hanford Site. The largest population of sage sparrows in Washington State can also be found at Hanford.

The Nez Perce have always considered that the land and its creatures are essential to everyday life. Humans are considered to be only one small part of a much larger circle of life on the earth. Nez Perce stories exemplify this intimate relationship between humans and the earth, and traditional Nez Perce culture weaves an intimate relationship between humanity and nature. In all phases of their daily lives, the Nez Perce recognize the spirits of the forces and objects around them as supernatural guardian forms, which they call in a personal way their *Wyakin*. The Nez Perce identify themselves with all the natural features of the earth. In the Nez Perce's belief, the earth is the ever-nourishing mother, as any mother provides for a child. We must continue to be caretakers of the earth, or life will surely soon end. These values are used in developing Alternative Two.

3.3.4.2 Assumptions Regarding Future Use. The assumptions used to develop Alternative Two are as follows:

- C Potential industrial and recreational development of the City of Richland and Benton County will primarily occur outside of the Hanford Site's boundary and close to Benton County's population centers.
- C Remediation of the Hanford Site will continue, and the security measures currently in place will continue to be required.
- C Plutonium production reactor blocks will remain in the 100 Areas throughout the planning period and will be considered a pre-existing, nonconforming use.
- C The last nontidal, unimpounded section of the Columbia River, and the salmon habitat found therein, as well as cultural resources of the indigenous people who pre-date the Federal government will be protected.

Figure 3-5. Alternative Two.



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- C The retained rights to the area, as recognized and affirmed by the Federal government in treaties with the affected Native American Tribes, will be protected.
- C International treaties concerned with protecting salmon and other wildlife will be honored.
- C With DOE's mission change from defense production to environmental restoration, the land needs of future DOE missions could be contained in the Central Plateau, 400 Area, and 300 Area.
- C Major portions of the Site could not be conveyed to private ownership due to soil contamination left at depth after remediation.
- C Existing contaminated groundwater conditions would not preclude development in any given location but would be considered a constraint to groundwater use and prevent transfer to private ownership, as the private sector would be unable and unwilling to accept the environmental liabilities.

3.3.4.3 Application of the Land-Use Designations. Alternative Two's land-use designations include Industrial-Exclusive, Industrial, Research and Development, High-Intensity Recreation, and Preservation. The location, shape, and size of the land-use designations were influenced by a thorough analysis of the existing cultural resources, the hazards and resources created by humans, and the geology.

3.3.4.3.1 The Wahluke Slope. Alternative Two would designate the entire Wahluke Slope as Preservation. Preservation would prohibit irrigation of the Wahluke Slope because irrigation is accelerating sloughing of the White Bluffs along the Hanford Reach of the Columbia River. Sloughing of the bluffs, or other activities that change the course of the Columbia River such as dredging or mining, could release chemical and radioactive contaminants that have been entombed within the fine sediments of the Hanford Reach.

Preservation would protect the last nontidal, unimpounded section of Columbia River and the salmon habitat found within, as well as the cultural resources of the indigenous people who pre-date the Federal government. Preservation would honor retained Tribal rights as recognized and affirmed by the United States of America in the *Treaties of 1855* with the affected Tribes (Appendix A), as well as complying with international fishing treaties. Preservation would prevent an additional appropriation of water from the Columbia River in order to support development of lands on the Wahluke Slope. The Wahluke Slope is not in acreage that has been appropriated water from the (57 U.S.C. 14). Finally, a Preservation designation would be appropriate because a large portion of the Wahluke Slope is too steep to develop (see Section 4.2).

3.3.4.3.2 The Columbia River Corridor. The Columbia River Corridor would include High-Intensity Recreation, Low-Intensity Recreation, Research and Development, and Preservation land-use designations. The Columbia River (surface water only) would be designated for Low-Intensity Recreation. The Nez Perce Tribe supports a Preservation designation for the islands in the Columbia River and the designation of the Hanford Reach as a "wild and scenic" river under Federal control. The B Reactor and surrounding area, which are located within the Columbia River Corridor, would be designated for High-Intensity Recreation and would allow conversion of the reactor into a museum with museum-related facilities. The B Reactor was the first full-scale nuclear reactor in the world and was critical in the development of the first nuclear weapons. The K Reactor area would be designated for Research and Development. The K Reactor area could be used by the Tribes and others for fish farming or for aquaculture and aquatic research.

The remainder of land within the 100 Areas would be designated Preservation. Preservation would protect retained rights of American Indian Tribes to the area and would protect sensitive cultural and biological resource areas. Prohibiting further irrigation and other land uses that increase infiltration on both sides of the Hanford Reach would aid in the stabilization of the Columbia River shoreline. Prohibiting irrigation would protect public health and the environment by preventing remobilization of contaminants entombed within the river's sediment and the shoreline's soil column, and would prevent siltation and destruction of salmon spawning beds. Preservation prohibiting irrigation near the reactor areas would mitigate mobilizing contaminants left behind at depth long after cleanup efforts have ceased (see Section 4.11). Because the cleanup efforts in the 100 Area's soil column are limited to a depth of about 6.1 m (20 ft) below ground surface, the contaminants remaining in the soil column below 6.1 m (20 ft) will not be remediated.

3.3.4.3.3 The Central Plateau. The majority of land within the Central Plateau geographic area would be designated Industrial-Exclusive, allowing for continued management of radioactive and hazardous waste. These management activities include collection and disposal of radioactive and hazardous waste materials that remain onsite, contaminated soil and groundwater containment and cleanup, and other related and compatible uses. Deed restrictions or covenants could be applied to this area through the CERCLA and RCRA processes. This designation would allow for expansion of existing facilities or the development of new facilities for Waste Management or other DOE missions.

Land west of the currently developed 200 West Area within the Central Plateau geographic area would be Preservation. This area contains high-quality mature sagebrush, which provides this essential habitat for shrub-steppe dependent species. This designation would prevent additional sprawl to the west and encourage siting of new projects between the 200 East and 200 West Areas.

3.3.4.3.4 The All Other Areas. The All Other Areas geographic area would include Industrial, Research and Development, and Preservation. Alternative Two designates, as Industrial, the City of Richland UGA, the 400 Area (including the Fast Flux Test Facility), and Energy Northwest (formerly known as WPPSS) to allow for future economic development. An Industrial designation would accommodate economic development of the area identified by the City of Richland's UGA boundary at the southeast portion of the Site for at least the next 50 years. An Industrial designation would also reserve the 400 Area for DOE missions and the Energy Northwest (formerly known as WPPSS) area for use by Energy Northwest. The area around LIGO within the All Other Areas geographic area would be designated Research and Development, consistent with current management practices.

The remainder of the All Other Areas geographic area would be designated Preservation. Major constraints identified in the *Draft Hanford Remedial Action Environmental Impact Statement and Comprehensive Land-Use Plan* (DOE 1996) demonstrated that the majority of the Hanford Site is unsuitable for economic development, and that the best future land use would be Preservation. Designating the majority of the All Other Areas as Preservation is appropriate because, while portions of the All Others Areas geographic area have a well-developed transportation network, these areas are remote from population centers thus limiting their economic potential. A sand dune complex and vegetation-stabilized sand dunes, which extend from the Columbia River westward across the Site to State Highway 240 (see Section 4.5), should not be developed because vegetation-disturbing activity might reactivate stabilized dune fields. Soil and groundwater contamination remaining at depth after remediation prevents these lands from being exploited for economic reasons due to the difficulties involved in transferring public lands with environmental liabilities to private ownership. For example, the widespread environmental contamination from the 200-BC cribs is approximately 32.1 km² (12 mi²).

1 A Preservation designation also precludes extensive economic development of the All Other
 2 Areas geographic area because of the large exclusive-use zones (safety buffers) around the
 3 Hanford Site's existing nuclear facilities (see Section 4.11). Additionally, the nature of the
 4 research conducted at LIGO requires a substantial seismic buffer zone for operation.

5 The promontories of Gable Mountain, Gable Butte, Umtanum Ridge, and a large portion of
 6 their viewsheds would be designated Preservation, consistent with traditional Tribal use. The *Old*
 7 *Indians* went to high mountains seeking vision sites and to fast for a few days to seek a vision or
 8 a *Wyakin* (which is the Nez Perce word for your personal vision spirit that will protect you for the
 9 rest of your life). The *Wyakin* could be a bird, four-legged animal, plant, or root, and it will be your
 10 personal medicine. During a vision quest, one looks at the big picture or the view as far as the
 11 eye can see. This view encompasses the big river, creeks, springs, the various grasses, shrubs,
 12 animals, birds, and even insects such as ants. These things and objects all have their place and
 13 souls on the mother earth; one prays to the Creator to bless you and ask him to take care of all
 14 these things.

15 To preserve these cultural resources (including wildlife), the large contiguous tract of
 16 shrub-steppe habitat in the All Other Areas surrounding the Central Plateau is designated
 17 Preservation. The resident elk herd, one of the largest remnants of relatively undisturbed shrub-
 18 steppe ecosystem, and viewsheds for American Indian vision sites (e.g., Gable Butte and Gable
 19 Mountain) would all be protected by a Preservation land-use designation. The Preservation land-
 20 use designation would also ensure that wildlife corridors are maintained.

21 **3.3.4.4 The Fitzner/Eberhardt Arid Lands Ecology Reserve (ALE Reserve).** The ALE
 22 Reserve geographic area would be designated Preservation in accordance with its management
 23 as the Rattlesnake Hills Research Natural Area. Currently, the USFWS manages the ALE
 24 Reserve for DOE. Privately owned mineral rights exist on the ALE Reserve that were not
 25 conveyed to the Federal government when the Hanford Site was formed. The ALE Reserve
 26 contains one of the few resident elk herds in the world that inhabit a semiarid area, and the ALE
 27 Reserve is one of the largest remnants of relatively undisturbed shrub-steppe ecosystem in
 28 Washington State.

3.3.5 Alternative Three

3.3.5.1 Planning Goals, Objectives, and Values (Vision). Benton, Franklin, Grant, and Adams counties and the City of Richland contain portions of the Hanford Site. Alternative Three represents the individual planning efforts of these local governments. The procedures used by these governments to develop Alternative Three vary by each planning jurisdiction. The designations in Grant County reflect the Wahluke 2000 Plan prepared by farming interests in 1992 and supported by Grant County (NPS 1996). The designations in Franklin County result from a land-use analysis conducted by the Franklin County Planning Department; and designations within Benton County were developed per the procedure outlined below:

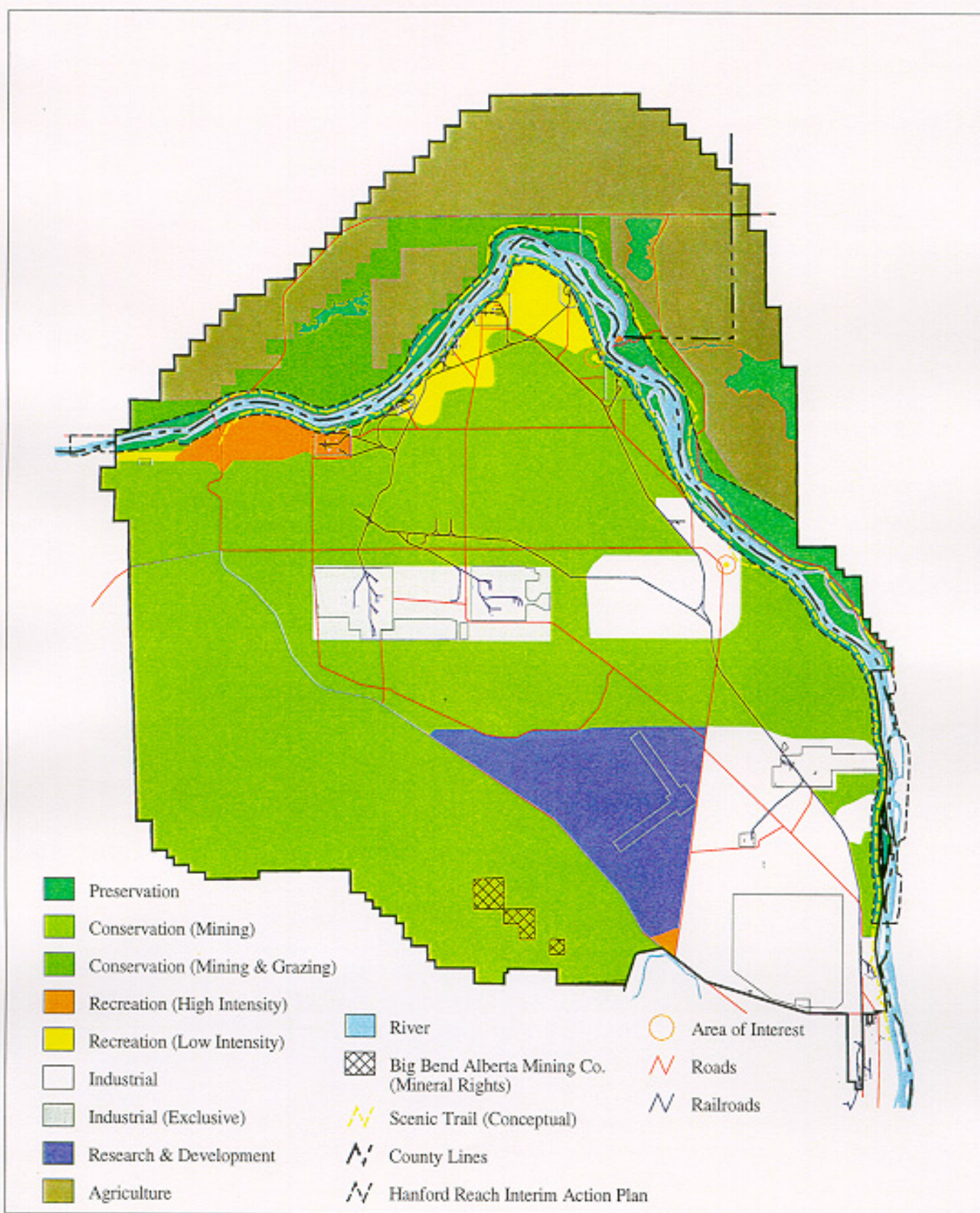
- C Existing Hanford Site resources were inventoried, mapped, and characterized.
- C Biological resources were identified per the WDFW priority habitat and species data base.
- C Natural and biological resources were then translated into five “critical resources,” consistent with the GMA, including wetlands, fish and wildlife conservation areas, frequently flooded areas, geologically hazardous areas, and critical aquifer recharge areas.
- C An opportunities and constraints analysis was performed using the assembled Hanford Site information.
- C Critical resources were placed in a single contiguous designation (i.e., the Conservation land-use designation).
- C Areas remaining outside of the Conservation designation were identified as suitable for development and analyzed to determine the appropriate “intensity” of use within the designated area.
- C After appropriate intensities were identified for each area suitable for development, land uses were designated consistent with “opportunities and constraints” (e.g., availability of infrastructure, nearness of urban areas, soils capabilities, and current use patterns/future options).

The land-use designations included in Alternative Three are presented in Figure 3-6. The county and city governments believe that the land-use designations for the Hanford Site address identified goals and values of DOE, the City of Richland, Benton County, and the HAB. The goals and values include economic diversification, increased public use for recreation and private enterprise, private-sector utilization of infrastructure, and the protection of biological and cultural resources (see text box, “Goals and Objectives”).

3.3.5.2 Assumptions Regarding Future Uses. The assumptions used to develop Alternative Three are as follows:

- C The Hanford Site will eventually be remediated as recommended by the Working Group.
- C Major portions of the Site will be used for multiple private and Federal uses after remediation.

Figure 3-6. Alternative Three.



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- C Existing contaminated groundwater conditions will not preclude development in any given location, but will be considered a constraint to groundwater use.
- C Plutonium production reactor blocks will remain in the 100 Areas throughout the planning period and will be considered a pre-existing, nonconforming use.

3.3.5.3 Application of the Land-Use

Designations. Alternative Three land-use designations include Industrial-Exclusive, Industrial, Agriculture, Research and Development, High-Intensity Recreation, Low-Intensity Recreation, Conservation (Mining), Conservation (Mining and Grazing), and Preservation.

For Site lands within Benton County, the location, shape, and size of the land-use designations were determined by analyzing the existing natural and man-made resources (e.g., infrastructure, topography, and biology) described in Chapter 4 (see text box, *“Allowable and Permitted Uses within the Land-Use Designations of Alternative Three”*). For lands within the Grant County portion of the Site, land-use designations were influenced by the input and analysis resulting from the Benton, Franklin, and Grant County Hanford Reach Citizens Advisory Panel, the Wahluke 2000 Plan, and the Wahluke Slope Element of the Grant County Comprehensive Plan. The lands within the Franklin County portion of the Site went through an analysis similar to that described above. The designations of Preservation, Conservation, Low-Intensity Recreation, and Agriculture on this portion of the Site were developed from onsite analysis and with input from the Benton, Franklin, and Grant County Hanford Reach Citizen’s Advisory Panel and the Wahluke 2000 Plan. In addition, the WDFW, the BoR, and the South Columbia Basin Irrigation District provided information.

Alternative Three would accommodate both future Federal missions and private activities, such as business-related industry and R&D enterprises, in the southeastern portion of the Site (north of the City of Richland). This area would be adjacent to essential services and large-capacity infrastructure. Accommodations for the expansion of public and commercial recreational activities would be focused on the northern portion of the Site (i.e., primarily in the vicinity of the Vernita Bridge). The largest land-use designation would be Conservation (Mining), which would represent a single continuous area that would extend over all geographic areas except the southern portion of the Site. Generally, the shape and extent of this designation would

Goals and Objectives

County and City Objectives (GMA Mandates *)

- C Designate city urban growth areas in cooperation with cities.*
- C Designate and conserve, by regulation, natural resource lands (i.e., agricultural lands and mineral resources).*
- C Designate and conserve, by regulation, critical resources.*
- C Protect the environmental, cultural, historical, and economic resources.*
- C Maintain functional infrastructure and utilities currently on the Site.
- C Provide for Low-Intensity Recreation.

Hanford Advisory Board

- C Historic and cultural resources have value. They should not be degraded or destroyed. Appropriate access to those resources is a part of their value.
- C The importance of ecological diversity and recreational opportunities should be recognized; these resources should be enhanced as a result of cleanup and Waste Management decisions.
- C Cleanup and Waste Management decisions should be coordinated with the efforts of the affected communities to shift toward more private business activity and away from dependence on Federal projects that have adverse environmental or economic impact.
- C Cleanup activities should protect to the maximum degree possible the integrity of all biological resources, with specific attention to rare, threatened, and endangered species and their habitats.
- C Use the Central Plateau wisely for Waste Management.

Hanford Future Site Uses Working Group (1992)

- C Deal realistically and forcefully with groundwater contamination.
- C Use the Central Plateau wisely for Waste Management.
- C Do no harm with cleanup or new development.

Commonly Identified Goals

- C Economic development and diversification
- C Protect the Columbia River
- C Clean up areas for future use.

include sensitive biological, physical, and cultural features on the landscape (e.g., rare, threatened, or endangered flora/fauna and their habitats; unique geologic hazards and features; and wetland and riverine environments), and would be intended to protect these resources over the long term.

In the southern portion of the Site, located north and northwest of Richland, is a large area designated for Industrial, and Research and Development land uses. Within these land-use designations, a large area of seral-stage, shrub-steppe habitat exists. Given the existence of other planning considerations identified in the All Other Areas geographic area, this area was not included with the Conservation (Mining) land-use designation, and would be considered suitable for future development. However, the importance of this habitat would be recognized and impacts to shrub-steppe habitat would require mitigation.

3.3.5.3.1 The Wahluke Slope. The soil, climate, and topography of the Wahluke Slope make it potentially one of the most productive agricultural areas in the Pacific Northwest. Prior to its inclusion in the Hanford control zone, the BoR had purchased over 10,927 ha (27,000 ac) of the Wahluke Slope for agricultural development. Development of land within the Site that is appropriate for agriculture would result in the completion of the vision for agricultural economy benefitting the citizens of the area. The land-use proposal for the Wahluke Slope seeks to provide balanced and compatible economic development, conservation of critical resource lands, and the protection of the Columbia River Corridor. The Wahluke Slope contains expansive critical resource lands not suitable for farming, but these lands are ideally suitable for wildlife habitat and Low-Intensity Recreation. Such areas constitute an ideal buffer providing protection between agricultural land and the Columbia River Corridor.

The largest land-use designation would be approximately 23,951 ha (59,184 ac), designated as Agriculture. Development of land for agriculture would be based upon an opportunities and constraints analysis. Land designated as Agriculture within the "Red Zone" consists of approximately 10,813 ha (26,720 ac) that would be conserved under a "no-action" scenario pending initiation and completion of geotechnical studies analyzing the impacts of irrigation to the White Bluffs and the Columbia River. Approximately 6,476 ha (16,003 ac) are designated Conservation (Mining and Grazing), including land providing

Allowable and Permitted Uses within the Land-Use Designations of Alternative Three

Allowable and permitted uses within any land-use designation would correspond to those listed in Table 3-1, except that within the Industrial, Research and Development, and High-Intensity Recreation land-use designations, dryland agricultural and commercial grazing would be considered an allowable use (typically interim). Irrigated agriculture would be considered an interim conditionally permitted use, which would be subject to existing deed restrictions or covenants standards that prohibit activities that impact contaminated soil and groundwater. Basalt outcrops and other culturally significant landscape features would not be available for mining.

Hanford's Agricultural Opportunity Cost

In a May 18, 1995, letter response to the Benton County Assessor, the Washington State University Area Extension Horticulturist, John W. Watson, estimated the present value of crops that could be grown on the Benton County portion of the Hanford Site. Watson's report estimated the farm gate income from arable Hanford acreage (79,737 ha [197,035 ac], or 73 percent of the area) under three assumption scenarios:

- C Assumption 1.** Benton County has 26 major crops currently being grown on irrigated land. Growing those crops on the Hanford Site, Hanford agricultural income would equal \$121,491,340.
- C Assumption 2.** If the crops that are expanding the fastest in the county are the only crops used to estimate potential income, the lost farm gate income in 1994 would be as follows:
 - 50% apples would be 98,517 acres at \$5,000/acre for \$492,800,000
 - 25% cherries would be 49,258 acres at \$7,000/acre for \$344,806,000
 - 25% grapes would be 49,258 acres at \$4,000/acre for \$197,032,000
 (resulting in a total of \$1,034,638,000).
- C Assumption 3.** If the total acreage was planted to high-income-producing apple varieties (e.g., Gala, Fuji, and Braeburn), then Hanford lands could produce an income of \$2,955,525,000 (assuming 197,035 ac at \$15,000/ac).

for wildlife refuge and Low-Intensity Recreational activities. Approximately 9,002 ha (22,244 ac) would be designated as Preservation. Generally, the shape and extent of this designation would include sensitive biological, physical, and cultural features on the landscape (e.g., rare, threatened or endangered flora/fauna and their habitats, unique geologic hazards and features, and wetland and riverine environments), and would be intended to protect these resources over the long term. Agriculture designated within the Franklin County portion of the Site is just outside of the BoR's Red Zone.

3.3.5.3.2 The Columbia River Corridor. Land-use designations included in the Columbia River Corridor under Alternative Three would support conservation of the Columbia River, and would maintain and support high-quality aquatic and riparian habitats. These land-use designations within the Columbia River Corridor geographic area are described below.

The Preservation land-use designation follows the boundaries of the locally proposed Hanford Reach Interim Protection Plan, which is an initial phase of the *Hanford Reach Protection And Management Plan* proposed by Benton, Franklin, and Grant counties to protect and manage the Hanford Reach jointly with Federal, state, and local authorities. The second phase of this proposal, which has legislation pending before Congress, is to appoint a Commission consisting of appointees from Federal and state agencies, and local jurisdictions, which would devise and implement the *Hanford Reach Protection and Management Plan*. The Preservation designation would extend upland 400 m (0.25 mi.) from the average high-water line of the river, except in Franklin and Grant counties, where the boundary would extend further inland to include specific sensitive features, such as the White Bluffs and several upland wetlands. Permitted uses would be similar to those within the Conservation land-use designation, except mining would be prohibited by the permitting process. Although Preservation is not a land-use term used under county-wide planning ordinances, Conservation is a recognized land-use term. The Conservation (Mining) land-use designation would include those areas that extend upland of the Preservation land-use designation. Within the Conservation (Mining) land-use designation, Mining would be allowed as a conditionally permitted use. Agriculture uses would be prohibited. The primary purpose would be to protect and manage fish and wildlife.

Areas surrounding the K, N, D, and H Reactor sites would be designated as Low-Intensity Recreation. This area has minimal biological sensitivity and contains unique natural features potentially suitable for public enjoyment. The Low-Intensity Recreation designation would begin 400 m (0.25 mi.) upland from the average high-water line of the river except in small isolated areas such as the former White Bluffs town site, and the existing recreational access corridors to the Columbia River. Environmental restoration activities would continue in the 100 Areas (i.e., 100-BC, 100-KE, 100-KW, 100-N, 100-D, 100-DR, 100-H, and 100-F). These uses would be considered a pre-existing, nonconforming use in the Low-Intensity Recreation land-use designation.

A hiking and biking recreational trail along the entire river corridor would be proposed from North Richland to the Vernita Bridge, which would allow public access along the river corridor and connect important historic and natural resources, such as the former Hanford and White Bluffs townsites, the Bruggerman Warehouse, and the B Reactor Museum, and would connect the rest stop and boat launch area located at the Vernita Bridge. This trail would be sited to avoid impact to, or contact with sensitive biological, cultural, hazardous, and/or natural resource-sensitive areas. This trail would connect to the river shore trails in Richland at the southern boundary.

3.3.5.3.3 The Central Plateau. The DOE would be expected to continue all Waste Management and disposal activities in the Central Plateau. As a result, the Central Plateau geographic area would be designated for Industrial-Exclusive Use.

1 **3.3.5.3.4 The All Other Areas.** The majority of the All Other Areas geographic area
2 would be designated Conservation (Mining). Within the Conservation land-use designation,
3 mining would be allowed as a conditionally permitted use. Agricultural uses would be prohibited.
4 A small area along the southern boundary of the Site near the Yakima River would be designated
5 High-Intensity Recreation. This area, adjacent to the Benton County Horn Rapids Park, is
6 currently “master planned” as a regional park. A High-Intensity Recreation land-use designation
7 would provide commercial use support for the expected increase in recreational and visitor use in
8 the park area (a central feature of the Tapteal Greenway), which would extend along the lower
9 Yakima River from Benton City to Columbia Point. The area adjacent to the Vernita rest stop,
10 east of State Highway 240 (which includes the B Reactor site), would also be designated as
11 High-Intensity Recreation. The Vernita rest stop, the proposed B Reactor Museum, and the
12 proposed boat launch are all expected to increase demand for recreational and visitor use of the
13 Vernita area. The strip designated for the west 135 ha (333 ac) of the Vernita Terrace would be
14 designated Low-Intensity Recreation, primarily for limited activities such as biking, hiking, fishing,
15 hunting, boat launching facilities, primitive day camping, and nature viewing, while maintaining the
16 natural resource values upon which those uses are based.
17

18 Areas north of the City of Richland would be designated as Industrial, and Research and
19 Development. This area would be accessible using the State Highway 240 corridor, State
20 Highway 10, and existing railroad infrastructure. Existing municipal water and sewer
21 infrastructure is located nearby within the City of Richland’s UGA boundary. Industrial use also
22 would be proposed for the area east of the 200 Area (i.e., May Junction), which contains
23 low-quality biological resources and existing rail and road infrastructure.
24

25 **3.3.5.3.5 The Fitzner/Eberhardt Arid Lands Ecology Reserve (ALE Reserve).** This
26 area would be designated as Conservation (Mining) due to the existing unique and sensitive
27 biological, ecological, and cultural resources.

3.3.6 Alternative Four

3.3.6.1 Planning Goals, Objectives, and Values (Vision). Alternative Four represents the vision of the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) for the management of the Hanford Site for the next 50 years (Figure 3-7). The alternative is based on a detailed knowledge of Site resources and upon experience gained from many years participating in a host of Hanford Site planning forums.

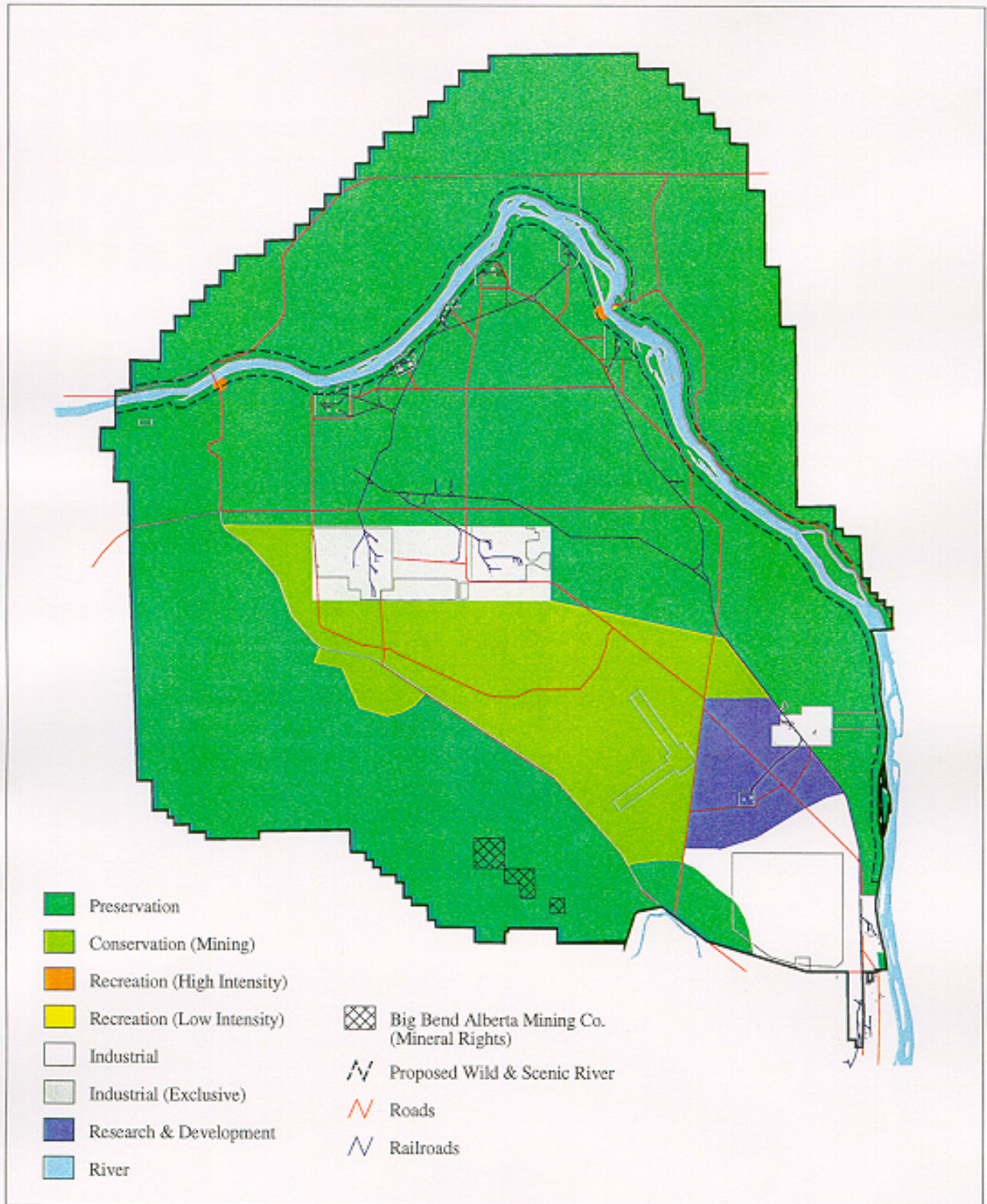
In the view of the CTUIR, the greatest value provided to the region and the nation by the Hanford Site is its role as a natural and cultural resource reserve. The CTUIR recognizes, nevertheless, that there are other services provided by the Hanford Site that are not compatible with this primary value, and that a rational land-use plan for Hanford must take into account these other services. In the CTUIR's review of the Hanford Site's resources, and of the current and potential services provided or potentially provided by the Site, we have striven to find the most rationally justifiable balance between these interests.

The result is a land-use plan that protects a significantly greater amount of Hanford resources than is protected under DOE's Preferred Alternative. Nevertheless, Alternative Four provides opportunities for waste management, commercial industry, and recreation that by the CTUIR's estimates would meet or exceed actual demand. In the view of the CTUIR (and consistent with the *Final Report of the Hanford Future Site Uses Working Group* [FSUWG 1992]), all permanent waste disposal sites at Hanford should be located in the Central Plateau waste management area. While Alternative Four provides opportunity for R&D activities, the CTUIR has intentionally provided an area for these activities that may not accommodate all proposals received over the next 50 years. The CTUIR has limited the size of this area because, in its view, the value provided by these activities does not justify the consumption of a large amount of Hanford Site resources. The CTUIR wants to ensure that Hanford lands would only be available to support the most valuable R&D activities, and that any future R&D activities on the Site would make efficient use of Hanford Site resources. Finally, Alternative Four provides no opportunity for agriculture on the Hanford Site. In the view of the CTUIR, agricultural development at Hanford is not justified. Any value that would be added to the region by allowing agricultural development at Hanford is grossly outweighed by the value presently provided by the natural and cultural services of the Site.

3.3.6.2 Assumptions Regarding Future Use

Remediation and Waste Management:

1. Remediation activities on the Hanford Site will continue as planned.
2. The remediation process will generally impose no long-term restrictions on future land use, with the exception of (a) activities that disturb capped permanent waste sites, (b) activities that disturb contaminants which remain in place 4.6 m (15 ft) or more below the ground surface in some areas, and (c) activities that would affect groundwater contaminant plumes.
3. Plutonium production reactor blocks will remain in the 100 Areas throughout the planning period and will be considered a pre-existing, nonconforming use.

Figure 3-7. Alternative Four.

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4. All permanent waste disposal activities (e.g., all capped permanent waste sites) will be located in the Central Plateau.
5. Geologic material will need to be mined onsite for the construction of caps over disposal sites.

Local Economic Transition:

1. The Tri-Cities area will need to develop a stable economic base that is independent of DOE activities and budgets. Economic considerations will cause most of that new development to take place within the City of Richland's UGA. Available projections indicate that, at the most, only 809 ha (2,000 ac) to 1,619 ha (4,000 ac) of the Hanford Site will be needed for private commercial development over the next 50 years.
2. Much development in the Tri-Cities area has made inefficient use of available lands, resulting in sprawl. Future land-use regulation should ensure more efficient use of available lands.

Research and Development Activities:

For practical reasons, DOE will locate the R&D activities needed to assist in Hanford remediation, restoration, and Waste Management in the following manner by one of these actions:

1. In sophisticated laboratory facilities within the City of Richland (e.g., EMSL)
2. In the 300 Area
3. Within the Central Plateau Waste Management area, or
4. As field studies with little environmental impact.

From time to time proposals are advanced for R&D activities at Hanford that are unrelated to remediation, Waste Management, or the restoration of the Site. Some of these proposals are rejected as making poor use of Hanford Site resources, but others are developed on the Site. This trend is likely to continue. The land-use planning process should ensure that only proposals that provide a clear value and make efficient use of available Hanford resources are accepted.

Natural and Cultural Resource Values, Management, and Use:

1. The Hanford Site and the U.S. Department of the Army's Yakima Training Center constitute the only large, relatively undisturbed areas of natural shrub-steppe habitat remaining in Central Washington.
2. The Hanford Reach will be designated as a Recreational River under the *Wild and Scenic Rivers Act* or other analogous legislation. Demand for (and the need to manage) recreational activity on the Reach and associated Hanford lands will steadily increase.
3. A public desire for low-impact recreation (including hunting) on the uplands of the

Hanford Site already exists and will increase over time.

4. The gathering, processing, distribution, and use of natural resources, and the cultural and religious laws governing these activities, are at the core of the traditional culture of the CTUIR and other Hanford-affected Tribes. The survival of the CTUIR's culture depends upon the availability of, access to, and traditional use of native natural resources. As a result, protection of native ecosystems and of Tribal member access to such resources is a priority for the CTUIR and other Tribal governments. As areas of the Hanford Site are determined to be clean, and as administrative mechanisms are put in place, members of the CTUIR and other Hanford-affected Tribes will make increasing use of the Hanford Site for the gathering of natural resources. Such activities will include subsistence plant gathering and hunting, as well as subsistence and commercial fishing.
5. The Hanford Site contains numerous places of religious importance to members of the CTUIR who practice traditional Indian religions. These places include the major basalt outcrops, the active dunes area, and other sites. These sites have been used by members of the CTUIR and other Hanford-affected Tribes from time immemorial for a wide variety of religious activities. In addition, the Prophet Smohalla, a founder of the Washat, or Seven Drums, religion, received his principal visions and teachings at places now located within the boundaries of the Hanford Site. Many members of the CTUIR are members of the Washat religion. Protection of these sites, and of Tribal members' access to these sites, is of great importance to the CTUIR and its members (as well as to other Hanford-affected Tribes) and will continue to be an issue of great importance.
6. The area currently occupied by the Hanford Site has been used by American Indian Tribes for at least the past 13,000 years, and likely much longer than that. Cultural resources such as cemeteries, village sites, and archaeological resources are abundant on the Hanford Site because of the area's abundance of natural resources, its central location on transportation routes, and its climate. The locations of many of these sites are presently unknown. Federal law mandates the protection of these resources. Moreover, the protection of these resources is very important to members of the CTUIR and other Hanford-affected Tribes. Respect for and non-disturbance of these resources is a fundamental religious value of members of the CTUIR who practice traditional religion. These management principles will continue to be defended by the CTUIR and other Hanford-affected Tribes.

3.3.6.3 Application of the Land-Use Designations. Alternative Four land-use designations include Industrial-Exclusive, Industrial, Research and Development, High-Intensity Recreation, Low-Intensity Recreation, Conservation (Mining), and Preservation. Low-Intensity Recreation, while generally not appearing as a separate land use in Alternative Four, would occur in all land-use designations, as long as protected resources are not placed at risk, and so long as incompatible development has not already occurred. Specific planning for support of Low-Intensity Recreation would take place as part of the implementation of the CLUP (see Chapter 6).

3.3.6.3.1 The Wahluke Slope. Alternative Four would manage the entire Wahluke Slope area as Preservation due to the outstanding value of its natural and cultural resources, which would be destroyed by more consumptive land uses. These resources include wetlands, uplands, and the White Bluffs. The White Bluffs are a unique geologic, paleologic, and cultural feature. The Bluffs, in particular, are highly susceptible to collapse due to activities that increase groundwater flow. Such collapses have occurred in recent years and their impacts continue.

Aside from causing the loss of this irreplaceable resource, such collapses bury salmon habitat under tons of silt and alter the course of the Columbia River. The alteration of the river's course causes new erosion which, in turn, destroys cultural resources on the islands and shore of the Columbia River, and potentially mobilizes contaminants that are currently stabilized. Managed, Low-Intensity Recreation (including hunting) and other activities would take place on Preservation lands.

Preservation is the land-use designation which bears the strongest resemblance to the land-use alternative chosen by the *Hanford Reach of the Columbia River, Comprehensive River Conservation Study and Environmental Impact Statement, Record of Decision* (NPS 1996). That Department of the Interior NEPA ROD determined that the best use of the Wahluke Slope is as a NWR. The DOE concurred that the Wahluke Slope should be a NWR. The CTUIR supported that decision, as did other Tribes, governments, and stakeholder groups.

Moreover, as the No-Action Alternative indicates, the Saddle Mountain NWR, which is managed by the USFWS, is currently managed in a manner that is most analogous to Preservation. Likewise, the Wahluke Wildlife Recreation Area is managed in the same manner. In both of these areas, as well as under the Hanford Reach ROD (DOI 1996), grazing is only allowed as a tool to improve wildlife habitat. Grazing solely for commercial production is not allowed anywhere on the Site.

In practice, none of the Saddle Mountain NWR has been grazed for many years. Likewise, the portion of the Wahluke Wildlife Recreation Area south of State Highway 24 is not grazed. Only the portion of the Wahluke State Wildlife Recreation Area north of State Highway 24 has been grazed in order to control cheatgrass. The WDFW lease allowing grazing on the Wahluke State Wildlife Recreation Area was allowed to expire on December 31, 1998 but, under SEPA regulations for up to 10 years after the expiration of the lease, the WDFW can reinstate the grazing lease without public review. Under this Preservation designation, grazing would be barred entirely. This would result in no changes to the current management of 26,000 ha (64,247 ac) or 73 percent of the Wahluke Slope. In the area north of State Highway 24, alternative methods for controlling cheatgrass would be adopted.

3.3.6.3.2 The Columbia River Corridor. Alternative Four would designate almost the entire Columbia River Corridor as Preservation due to its outstanding natural and cultural resources. The Columbia River Corridor contains a wealth of aquatic and terrestrial natural resources, including salmon, sturgeon, mule deer, bald eagles, and many others. The Columbia River Corridor is also an area where cultural resources such as cemeteries and archaeologic resources are highly concentrated.

The Corridor has historically contained reactors and associated buildings to support Hanford's former defense production and energy research missions. Nevertheless, remediation planning documents, public statements of advisory groups, and planning documents such as the "Record of Decision: Decommissioning of Eight Surplus Production Reactors at the Hanford Site, Richland, Washington, Environmental Impact Statement" (58 FR 48509, dated September 16, 1993), have determined that remediation and restoration of the Columbia River Corridor would return the corridor to a non-developed, natural condition. Restrictions on certain activities may continue to be necessary to prevent the mobilization of contaminants, the most likely example of such restrictions being on activities that discharge water to the soil. Although the Surplus Reactor NEPA ROD calls for the reactor buildings to be demolished and the reactor blocks to be moved to the Central Plateau, this action might not take place until 2068 or a new Tri-Party Agreement milestone is negotiated. As a result, the reactor buildings will remain in the Columbia River Corridor throughout the 50-year planning period addressed by the Final HCP EIS.

The Preservation designation would allow managed recreation within the Corridor. This activity would include the continued operation of the White Bluffs boat launch, managed as Low-Intensity Recreation, on the east side of the river. Other infrastructure to support Low-Intensity Recreation would be identified during implementation of the CLUP.

Alternative Four provides for a High-Intensity Recreation public boat launch located near the Vernita Bridge on the south side of the river. Alternative Four provides another High-Intensity Recreation boat launch, located at the White Bluffs boat launch on the west side of the river. The White Bluffs boat launch would support Tribal treaty-reserved fishing activity throughout the Reach, and would contain appropriate support facilities for that purpose.

Alternative Four does not provide for the creation of a High-Intensity Recreation tourist facility at the B Reactor. The CTUIR prefers to remove all vestiges of nuclear weapons production from the Hanford Reach.

3.3.6.3.3 The Central Plateau. Consistent with the findings of the *Final Report of the Future Site Uses Working Group* (FSUWG 1992), subsequent planning documents, and the general consensus of governments and stakeholders, the Central Plateau would be used for waste management activities, designated in this EIS as Industrial-Exclusive. All permanent waste disposal at the Hanford Site would take place within the Central Plateau. Likewise, R&D activities associated with waste management would take place within this geographic area. Land use within this area would have to be carefully planned during implementation of the CLUP to ensure that DOE would not run short of area for waste management activities. Since the Central Plateau currently contains natural resources of high value, developments that impact these resources would be mitigated using the BRMaP.

3.3.6.3.4 The All Other Areas. The All Other Areas geographic area contains a variety of natural and cultural environments, including large stands of mature sagebrush-steppe, basalt outcrops, an active dune complex, stabilized dunes, a wide variety of archaeological resources, American Indian cemeteries, former agricultural lands, the remains of former DOE facilities, and the remains of two former small towns. Because of the diversity of the All Other Areas, Alternative Four applies a variety of land-use designations to this area. While Low-Intensity Recreation generally does not appear as a separate land use in this geographic area, it is anticipated that during the implementation of the CLUP (Chapter 6), opportunities for compatible Low-Intensity Recreation would be established throughout much of the All Other Areas geographic region.

Alternative Four recognizes that the area within 3.2 km (2 mi) of the Columbia River (an area much larger than the 400 m [0.25 mi.] area protected by proposed legislation for the Hanford Reach, or considered to be part of the Columbia River Corridor) contains a disproportionately high share of the archaeological resources and cemeteries on the Hanford Site. This area also has high natural resource value as a wildlife corridor. In recognition of these facts and the importance of protecting these resources, Alternative Four designates this expanded corridor area as Preservation.

Alternative Four also recognizes that the area north of Gable Butte and Gable Mountain (but outside of the expanded corridor area), contains large blocks of mature, relatively undisturbed sagebrush-steppe habitat. Alternative Four places these areas under the Preservation designation because of the increasing rarity of such resources in Central Washington, the need to avoid fragmentation, and the value of these areas as wildlife corridors. Alternative Four differs from Alternative One by including areas of lower quality habitat within this Preservation area. Alternative Four does this in the interest of avoiding fragmentation. Under Alternative Four, these lower quality areas would be prime sites for the location of restoration

1 projects initiated under BRMaP as mitigation for development in other parts of the Hanford Site.
2 Likewise, such areas would be appropriate for natural resource restoration initiated under the
3 natural resource damage restoration provisions of CERCLA. The area north of the ALE Reserve
4 and south of Umtanum Ridge (also known as McGee Ranch) would be designated Preservation
5 because of its value as a wildlife corridor and in the interest of avoiding fragmentation. This area
6 would also be a suitable location for habitat impact mitigation activities.
7

8 Alternative Four recognizes that the basalt outcrops beginning with Gable Mountain in the
9 east and moving west through Gable Butte and Umtanum Ridge have been of great religious and
10 cultural importance to members of the CTUIR, members of other Hanford-affected Tribes, and
11 their ancestors for many millennia. These sites continue to be of great religious importance to
12 many members of the CTUIR and other Hanford-affected Tribes. In addition to religious
13 importance, these sites are of great cultural and archaeologic value to members of the CTUIR in
14 general. These outcrops also have distinct habitat value, such as providing raptor perching area
15 and talus slope habitat. In recognition of the irreplaceable cultural value of these resources and
16 their biological importance, Alternative Four designates these areas as Preservation.
17

18 An important part of cultural and religious use of a basalt outcrop such as Gable Mountain
19 is the view such areas provide of the surrounding landscape. When this landscape is damaged
20 by development -- especially when that development occurs relatively near the viewpoint -- the
21 cultural use of the Site is seriously injured. The CTUIR members' use of Gable Mountain and
22 Gable Butte has already been significantly injured by the development of the Central Plateau. To
23 prevent further injuries to the central basalt outcrops' viewshed, Alternative Four designates the
24 area north of the Central Plateau and south of the outcrops, as well as the area east of the
25 Central Plateau (also known as May Junction), as Preservation. Designation of the May Junction
26 area as Preservation is especially critical, due to its close proximity to Gable Mountain (see
27 Chapter 4, Figure 4-33). The designation as Preservation of other portions of the All Other Areas
28 geographic region, mentioned above, also supports the protection of the central basalt outcrops'
29 viewsheds.
30

31 Existing structures on Gable Mountain itself also injure CTUIR members' cultural and
32 religious use of the mountain. Under Alternative Four, structures not currently in use would be
33 removed. During implementation (Chapter 6), further steps would be taken to facilitate the
34 relocation of pre-existing, nonconforming structures to more appropriate locations.
35

36 Alternative Four recognizes that the area of active dunes, located north of Energy
37 Northwest (formerly known as WPPSS), is similar to the basalt outcrops in being an area of great
38 religious and cultural significance as well as being an area of distinct habitat value. Alternative
39 Four would treat these dunes in a similar manner to the basalt outcrops, designating the dune
40 area as Preservation.
41

42 This alternative anticipates that work in the Central Plateau Industrial-Exclusive waste
43 management area may require the consumption of large quantities of sand, gravel, and basalt for
44 capping material. Economic considerations would likely require that these materials come from
45 areas near the Central Plateau. While making it clear that the basalt outcrops and the active
46 dunes area are fundamentally inappropriate for such consumptive uses, Alternative Four does
47 anticipate the need to make such materials available. As a result, Alternative Four designates a
48 large area near the Central Plateau and between the Plateau and the southeastern border of the
49 Hanford Site as Conservation (Mining). This area contains a variety of soil and rock types
50 allowing DOE several options for locating quarries which would meet anticipated waste
51 management specifications and quantities.

While the Conservation (Mining) designation provides DOE with the means to satisfy its need for geologic materials, the designation also reflects the high quality of the habitat in this area. Portions of this area contain some of the largest and highest quality mature sagebrush communities on the Hanford Site. Were it not for the need to supply DOE with geologic material, much of this area would most appropriately be designated Preservation. As a result, DOE would need to make prudent choices regarding the removal of needed material, so as to minimize impacts to this generally high-quality habitat. Such decisions would be made during implementation of the CLUP (Chapter 6). Likewise, the provisions of BRMaP would provide incentive for DOE to minimize these impacts, while also providing the assurance that such impacts would be appropriately mitigated. If these geologic materials are not needed to support the Waste Management and cleanup mission, the land-use designation for this area should revert to Preservation.

The southern portion of the area, which Alternative Four designates Conservation (Mining), contains the existing LIGO facility. Alternative Four treats LIGO as a pre-existing, nonconforming use. The LIGO facility would continue to operate throughout its life span, but its use could not be altered to increase its nonconformity, and similar R&D facilities could not be located in this area. This area also contains the square mile of land owned by the State of Washington, but not currently developed. The State of Washington's reason for purchasing this land was to build a hazardous waste treatment, storage and disposal facility on this site (State of Washington 1980). In the view of the CTUIR, such a facility would be a poorly reasoned use of the land. Because this square mile of land is not owned by DOE, this EIS apparently cannot determine the land use on this land. It appears that such a determination can only be made by Benton County. The CTUIR urges Benton County and the State of Washington to agree to a land-use designation for this square mile which is consistent with the designation for the surrounding land adopted in the ROD for this Final HCP EIS.

Alternative Four designates the portion of the All Other Areas geographic area that is south and east of the Wye Barricade (between State Highway 10 and the Hanford Site rail line) as Research and Development and Industrial in roughly equal amounts. Alternative Four provides 4,388 ha (10,843 ac) for Research and Development. The primary purpose of this land would be to meet any future DOE need for additional research facilities to support the remediation, Waste Management, and restoration mission. Nevertheless, Alternative Four recognizes that from time to time, proposals will be made for the development of R&D facilities on the Hanford Site that are unrelated to the cleanup mission. Alternative Four provides adequate land for the development of facilities that make efficient use of available resources, while screening out facilities that are highly consumptive of Hanford resources. Such facilities could also be located on available land within the Industrial designation.

While current studies (e.g., the *City of Richland's Comprehensive Plan* [CoR 1997] and the Draft *Benton County Comprehensive Plan* [BCPD 1997]) indicate there will be little or no demand for industrial sites in this area in the next 20 years, Alternative Four recognizes that when private commercial industrial development begins onsite, it would most likely occur in the area immediately north of the City of Richland. Length of commute, distance required for the extension of utilities, and similar factors would encourage private commercial development to take place in this area. While the demand for such land is at this point highly speculative, Alternative Four recognizes that the CLUP adopts a 50-year planning horizon, and that such development may occur within that time frame. As a result, Alternative Four provides 6,882 ha (17,006 ac) for Industrial development. Planning concerning the provision of infrastructure to support industrial development in this area, planning determining the sequence of development in this area, and planning aimed at discouraging sprawl would all occur during implementation of the CLUP (see Chapter 6).

1 Finally, Alternative Four designates a 3.2 km (2 mi) corridor along the Yakima River as
2 Preservation for the same reasons a similar corridor along the Columbia River was designated
3 Preservation (i.e., the density of archaeologic sites combined with the area's value as a wildlife
4 corridor).

5
6 **3.3.6.3.5 The Fitzner/Eberhardt Arid Lands Ecology Reserve (ALE Reserve).** The
7 same cultural and religious values that pertain to the central basalt outcrops apply with equal
8 force to Rattlesnake Ridge, the dominant feature of the ALE Reserve. The ALE Reserve is
9 currently managed by the USFWS. In recognition of the ALE Reserve's outstanding natural and
10 cultural resource value, the ALE Reserve geographic area has been managed for the past
11 30 years in a manner that is consistent with the Preservation designation. Alternative Four would
12 continue that mode of management, designating this area Preservation. The sole exception is an
13 area of the ALE Reserve bordering State Highway 240 near the 200 West Area that would be
14 designated Conservation (Mining). This area contains large near-surface basalt and soil sources
15 which would provide an adequate and economic source for Central Plateau waste management
16 needs. Since no siting decision has been made, it is not certain that this area would be used as
17 a quarry site. If the site is not used as a source for waste site capping material, the land-use
18 designation should revert to Preservation. This analysis would occur during implementation of
19 the CLUP (see Chapter 6).

20
21 The ALE Reserve geographic area contains buildings and structures that are currently not
22 in use. Structures that are nonconforming and which are not in use at the time the CLUP is
23 finalized cannot be used in a nonconforming manner after the adoption of the CLUP in the ROD
24 for this EIS (see Chapter 6). Under Alternative Four, structures not currently in use would be
25 removed. During implementation, further steps would be taken to facilitate the relocation of pre-
26 existing, nonconforming structures to more appropriate locations.
27
28

3.4 Summary of Potential Environmental Impacts

The CEQ NEPA implementing procedures (40 CFR 1500-1508) require a comparative summary of potential environmental impacts and mitigation measures be presented in the alternatives chapter. Table 3-3 contains a summary of land-use designation areas by alternative. For ease in understanding, the table is repeated in hectares, acres, square miles, and percentages. Table 3-4 contains a summary of potential cumulative impacts from the land-use alternatives by impacted resource. Detailed analyses of potential environmental impacts for each of the land-use alternatives are given in Chapter 5 of this document.

3.4.1 Comparison of Affected Areas by Alternative

Table 3-3 is a comparative summary of the amount of acreage under each alternative that would be potentially subject to impacts from development. In addition to the 148,080 ha (572 mi²) of land surface areas, this EIS affects 3,642.3 ha (14.1 mi²) of surface water, almost all of which is the Columbia River (i.e., a navigable river) where access cannot be controlled. Because access cannot be controlled on the Columbia River, it has no land-use designation. For this EIS, the 1,517 km² (586 mi²) area within the boundary of the Hanford Site includes both the land area and the river area.

3.4.2 Comparison of Affected Environmental Resources and Other NEPA Values

The effects of choosing a land-use alternative are discussed for the following subject areas: (1) geologic resources, (2) water resources, (3) biological resources, (4) cultural resources, (5) aesthetic resources, (6) socioeconomic resources, (7) environmental justice, and (8) human health. Many of the potentially significant adverse impacts would occur as a result of disturbances of relatively pristine natural areas on the Hanford Site.

Natural plant and wildlife communities have flourished, sensitive species have been preserved, and archaeological and cultural resources have been protected because historically large areas of the Hanford Site have been used solely for security buffers. Each alternative uses an unique balance of impact avoidance (i.e., committing the land to preservation or conservation) versus impact mitigation. This balance is based on the planning goals, objectives, and values (i.e., vision) of each alternative. For example, Alternative Two relies almost exclusively on avoidance by designating 95 percent of the Hanford Site as Preservation. Therefore, among the alternatives, Alternative Two provides the highest level of resource protection. But this resource protection is at the sacrifice of multiple-use goals where the Hanford Site's natural and infrastructure resources could be used for economic development. Mitigation of disturbance effects through the use of policies and implementing procedures as an augmentation to the alternative map, is an alternate means of resource protection exemplified best by Alternative Three. Mitigation is the form of resource protection employed by more development-oriented or multiple-use oriented alternatives. Successful mitigation depends on the adopted CLUP map working in concert with the CLUP policies and implementing procedures to protect unique, cultural, or sensitive resources through avoidance of impacts after site-specific considerations or mitigation of the impacts by prescribed mitigation procedures. The Implementing Procedures (e.g., project review, resource management plans (RMPs), AMPs, and NEPA or SEPA reviews) provide mitigation guidelines where avoidance is less desirable than project implementation with mitigation.

The alternatives vary in their reliance on avoidance or mitigation as the principal means of protection. Because it has no land-use designations, policies, or implementing procedures based on a CLUP, the No-Action Alternative relies almost exclusively on mitigation through NEPA. All the other alternatives fall between Alternative Two and the No-Action Alternative with respect to the balance used between impact avoidance and mitigation.

The DOE intends to prepare a Mitigation Action Plan after the ROD for this EIS is issued which would address mitigation commitments made in the ROD. In general, these mitigation commitments can be expected to include updating the existing resource management plans such as the CRMP, BRMaP, and *Hanford Bald Eagle Management Plan*; and committing to a schedule to develop additional resource management plans (e.g., Minerals Resources Management Plan) under the procedures outlined in Chapter 6. The resource impact analyses in Chapter 5 of this Final HCP EIS include ranges of potential mitigation measures for each land-use alternative.

Table 3-3. Comparisons of Affected Areas by Alternative. (4 pages)

	No-Action ^a	Preferred Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Areas in Hectares						
Agriculture	0	0 (0) ^b	0	0	23,951	0
Conservation (Mining and Grazing)	0	0 (43,857) ^b	0	0	6,476	0
Conservation (Mining)	0	44,183 (1,005) ^b	15,921	0	72,685	19,341
Industrial	22,534	15,335 (15,378) ^b	2,542	1,830	17,860	6,882
Industrial-Exclusive	5,064	5,064	4,593	4,593	5,064	5,064
Preservation	46,366	78,127 (77,449) ^b	124,517	140,767	9,002	112,321
High-Intensity Recreation	0	125 (82) ^b	64	191	1,768	77
Low-Intensity Recreation	1	334	29	0	3,097	7
Research and Development	0	4,912	414	699	8,177	4,388
Open Space Reserved	74,115	0	0	0	0	0
TOTAL^c	148,080	148,080	148,080	148,080	148,080	148,080

^a The No-Action Alternative does not have land-use designations. It has areas administered similar to land-use designations (see Figure 3-2).

^b Areas in Revised Draft EIS.

^c In addition to the 148,080 ha (572 mi²) of land surface areas, this EIS affects 3,642.3 ha (14.1 mi²) of surface water, almost all of which is the Columbia River.

Table 3-3. Comparisons of Affected Areas by Alternative. (4 pages)

	No- Action ^a	Preferred Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Areas in Acres						
Agriculture	0	0 (0) ^b	0	0	59,184	0
Conservation (Mining and Grazing)	0	0 (108,371) ^b	0	0	16,003	0
Conservation (Mining)	0	109,179 (2,483) ^b	39,342	0	179,609	47,793
Industrial	55,684	37,894 (38,000) ^b	6,281	4,522	44,133	17,006
Industrial-Exclusive	12,513	12,323	11,350	11,350	12,513	12,513
Preservation	114,573	193,056 (191,381) ^b	307,688	347,843	22,244	277,551
High-Intensity Recreation	0	309 (203) ^b	158	472	4,369	190
Low-Intensity Recreation	2	825	72	0	7,653	17
Research and Development	0	12,138	1,023	1,727	20,206	10,843
Open Space Reserved	183,142	0	0	0	0	0
TOTAL^c	365,914	365,914	365,914	365,914	365,914	365,914

^a The No-Action Alternative does not have land-use designations. It has areas administered similar to land-use designations (see Figure 3-2).

^b Areas in Revised Draft EIS.

^c In addition to the 148,080 ha (572 mi²) of land surface areas, this EIS affects 3642.3 ha (14.1 mi²) of surface water, almost all of which is the Columbia River.

Table 3-3. Comparisons of Affected Areas by Alternative. (4 pages)

	No-Action ^a	Preferred Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Areas in Square Miles						
Agriculture	0	0 (0) ^b	0	0	92	0
Conservation (Mining and Grazing)	0	0 (169) ^b	0	0	25	0
Conservation (Mining)	0	171 (4) ^b	61	0	281	75
Industrial	87	59 (59) ^b	10	7	69	27
Industrial-Exclusive	20	20	18	18	20	20
Preservation	179	302 (299) ^b	481	544	35	434
High-Intensity Recreation	0	0	0	1	7	0
Low-Intensity Recreation	0	1	0	0	12	0
Research and Development	0	19	2	3	32	17
Open Space Reserved	286	0	0	0	0	0
TOTAL^c	572	572	572	572	572	572

^a The No-Action Alternative does not have land-use designations. It has areas administered similar to land-use designations (see Figure 3-2).

^b Areas in Revised Draft EIS.

^c In addition to the 148,080 ha (572 mi²) of land surface areas, this EIS affects 3642.3 ha (14.1 mi²) of surface water, almost all of which is the Columbia River.

Table 3-3. Comparisons of Affected Areas by Alternative. (4 pages)

	No-Action ^a	Preferred Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Percentage of Area						
Agriculture	0.00%	0.00% (0.00%) ^b	0.00%	0.00%	16.17%	0.00%
Conservation (Mining and Grazing)	0.00%	0.00% (29.62%) ^b	0.00%	0.00%	4.37%	0.00%
Conservation (Mining)	0.00%	29.84% (0.68%) ^b	10.75%	0.00%	49.08%	13.06%
Industrial	15.22%	10.36% (10.38%) ^b	1.72%	1.41%	12.06%	4.65%
Industrial-Exclusive	3.42%	3.42%	3.10%	3.10%	3.42%	3.42%
Preservation	31.31%	52.76% (52.30%) ^b	84.09%	94.89%	6.08%	75.85%
High-Intensity Recreation	0.00%	0.08% (0.06%) ^b	0.04%	0.13%	1.19%	0.05%
Low-Intensity Recreation	0.00%	0.23%	0.02%	0.00%	2.09%	0.00%
Research and Development	0.00%	3.32%	0.28%	0.47%	5.52%	2.96%
Open Space Reserved	50.05%	0.00%	0.00%	0.00%	0.00%	0.00%
TOTAL	100.00%	100.00	100.00	100.00	100.00	100.00

^a The No-Action Alternative does not have land-use designations. It has areas administered similar to land-use designations (see Figure 3-2).

^b Areas in Revised Draft EIS.

^c In addition to the 148,080 ha (572 mi²) of land surface areas, this EIS affects 3642.3 ha (14.1 mi²) of surface water, almost all of which is the Columbia River.

Table 3-4. Summary of Potential Impacts to Hanford Site Resources. (8 pages)

Resource	Preferred Alternative	Alternative One	Alternative Two	Alternative Three	Alternative Four	No-Action Alternative
GEOLOGIC RESOURCES						
Features	Unique geologic features such as Gable Mountain, Gable Butte, the White Bluffs; and active sand dunes would be protected.	Same as the Preferred Alternative.	Same as the Preferred Alternative. Stabilized sand dunes would also be protected.	Unique geologic features could be developed to obtain materials for remediation and economic development.	Same as the Preferred Alternative except stabilized sand dunes would also be protected.	Unique geologic features could be developed.
Missoula Flood Deposits	Missoula Flood features would be protected by Plan Policies and Procedures.	Missoula Flood features would be protected by Plan Policies and Procedures.	Missoula Flood features would be protected by Plan Policies and Procedures.	Missoula Flood features would be protected by Plan Policies and Procedures.	Missoula Flood features would be protected.	Same as Preferred Alternative because of their cultural significance.
Geologic Materials	Viable sources of geologic materials for governmental purposes could be developed.	Geologic materials could be developed only from existing quarries and to support remediation.	Geologic resources to support remediation would need to be obtained from offsite sources.	Same types of impacts as the Preferred Alternative, but applied to 66% more surface area.	Geologic materials could be developed only to support remediation.	Commercial development of geologic resources would not be restricted.
Natural Gas	Existing natural gas claims on the ALE Reserve could be developed, but the Preservation designation surrounding those claims would preclude construction of an access road.	Same as Preferred Alternative.	Same as Preferred Alternative.	Existing natural gas claims could be developed and an access road could be constructed under the Conservation (Mining) designation.	Same as Preferred Alternative.	Existing natural gas claims could be developed and an access road could be constructed.
Soils	Soil compaction and erosion could occur around quarry sites.	Soil compaction and erosion could occur around quarry sites.	The potential for soil erosion and compaction would be minimized by maintaining existing vegetative cover and precluding development.	Soil compaction and erosion could occur around quarry sites. Cultivated agriculture would increase soil erosion through removal of existing cover and tillage.	The potential for soil erosion and compaction would be minimized. Some soil erosion and compaction could occur as a result of mining in support of remediation.	Mining, grazing, and cultivated agriculture could increase soil compaction or erosion.

Table 3-4. Summary of Potential Impacts to Hanford Site Resources. (8 pages)

Resource	Preferred Alternative	Alternative One	Alternative Two	Alternative Three	Alternative Four	No-Action Alternative
1 WATER RESOURCES						
2 Surface Water	Runoff from mining operations located close to the Columbia River could lead to water quality degradation.	Mining restricted to upland areas would have little impact on water quality.	Mining, grazing, and agriculture would not be allowed; therefore, there would be no impacts to surface water.	Mining prohibited within 1/4 mile of the Columbia River, would have little impact on water quality.	Same as Alternative One.	Same as the Preferred Alternative.
3	Grazing would not be allowed, so no impacts would result from this activity.	Grazing would not be allowed, so no impacts would result from this activity.	Experimental aquaculture could increase the nutrient load in the Columbia River.	Grazing permitted in irrigation flow returns on the Wahluke Slope, potentially leading to increased siltation.	Grazing would not be allowed, so no impacts would result from this activity.	Same as the Preferred Alternative.
4	Increased recreational access to the Columbia River could increase shoreline erosion from boating wake and could generate additional pollution, such as oil, gas, and engine exhaust.	Similar to the Preferred Alternative, but fewer access points would be provided and use of the river might not increase as much.	Recreational access to the Columbia River would not be increased.	Same types of impacts as the Preferred Alternative, but applied to 66% more surface area.	Similar to the Preferred Alternative.	Same as Alternative Two.
5	Groundwater					
	Mining operations could require groundwater withdrawal for material washing and dust control. Surface water could also collect in quarry sites increasing groundwater recharge locally.	Similar to the Preferred Alternative.	Mining operations would not be allowed.	Same types of impacts as the Preferred Alternative, but applied to 66% more surface area.	Same as the Preferred Alternative.	Same as the Preferred Alternative.
	Groundwater withdrawal for industrial uses could alter flow patterns. Discharges to the soil column could mobilize contaminants in the vadose zone and accidental releases could contaminate groundwater.	New impacts to groundwater from industrial development would be minimal.	New impacts to groundwater from industrial development would be minimal.	Same as the Preferred Alternative. Agricultural chemicals could impact Wahluke groundwater and recharge from Wahluke irrigation could alter flow patterns and lead to slumping in the White Bluffs.	Same as the Preferred Alternative.	Same potential impacts as the Preferred Alternative, but new impacts could be distributed across the Hanford Site. Potential impacts from Agriculture similar to Alternative Three.

Table 3-4. Summary of Potential Impacts to Hanford Site Resources. (8 pages)

	Resource	Preferred Alternative	Alternative One	Alternative Two	Alternative Three	Alternative Four	No-Action Alternative
1	BIOLOGICAL RESOURCES						
2 3	Federal Endangered Species	Increased protection of the river from development would ensure salmon and steelhead spawning areas are protected. Increased recreational access to the Columbia River could adversely affect salmonid spawning areas and the proposed Tribal Village and White Bluffs boat launch could impact the Bald Eagle nesting attempts.	Protects all species from development and restricts access to the Columbia River. Does not assume consumptive use of species through treaty-reserved rights. Is the Environmentally Preferable Alternative.	Protects all species from development and restricts access to the Columbia River. Allows consumptive use of species through treaty-reserved rights.	Increased threat to habitat from Wahluke Slope development. Increased protection of the river from development would help protect salmon and steelhead spawning areas. Increased recreational access to the Columbia River could adversely affect salmonid spawning areas. Proposed High Intensity Recreation Area and White Bluffs boat launch could impact the Bald Eagle nesting attempts.	Protects all species from development and restricts access to the Columbia River. Allows consumptive use of species through treaty-reserved rights.	Between Preferred Alternative and Alternative One.
4	Vegetation	Surface clearing would eliminate vegetation and wildlife habitat in areas designated for development.	Much lower than the Preferred Alternative.	Much lower than the Preferred Alternative.	Greater impacts than the Preferred Alternative. Clearing of vegetation for cultivated agriculture.	Less than the Preferred Alternative.	Greater than the Preferred Alternative.
5	Habitat	Utility corridors and access roads could fragment habitat within areas designated for industrial development. Generally protected by Plan's Policies that designate development in habitat that is of lower biological value.	Lower than under the Preferred Alternative.	Potential impacts restricted to urban growth area.	Same as the Preferred Alternative, but larger areas designated for development, so potential greater need for new infrastructure.	Less than the Preferred Alternative.	Greater than Preferred Alternative.
6	Grazing	Grazing would not be allowed under this alternative.	Commercial grazing is not allowed under this alternative.	Commercial grazing would not be allowed under this alternative.	Grazing is a permitted interim use for other than Preservation or Conservation uses under this alternative's Policies.	Grazing is not allowed under this alternative.	Grazing impacts restricted to the Wahluke Slope north of State Highway 24.

Table 3-4. Summary of Potential Impacts to Hanford Site Resources. (8 pages)

	Resource	Preferred Alternative	Alternative One	Alternative Two	Alternative Three	Alternative Four	No-Action Alternative
1	Aquatic Resources	Increased recreational access to the Columbia River could adversely affect salmonid spawning areas, aquatic plant communities, and other resources associated with the river.	Lower than the Preferred Alternative.	No increase in recreational access under this alternative, so no new impacts.	Same impact as the Preferred Alternative.	Similar, but potentially lower, impacts than the Preferred Alternative.	Less than the Preferred Alternative because no new boat ramps.
2 3	Wildlife Migration Corridor	The integrity of the wildlife migration corridor associated with McGee Ranch would be maintained.	Same as the Preferred Alternative.	Same as the Preferred Alternative.	McGee Ranch available for development.	Same as the Preferred Alternative.	McGee Ranch available for development.
4 5 6	Preservation of BRMaP Level III and Level IV Resources	Preservation designation would protect 66% of BRMaP Level III, and 85% of BRMaP Level IV resources.	Preservation designation would protect 92% of BRMaP Level III and 85% of BRMaP Level IV resources.	Preservation designation would protect 96% of BRMaP Level III and 85% of BRMaP Level IV resources.	Preservation designation would protect 5% of BRMaP Level III and 13% of BRMaP Level IV resources.	Preservation designation would protect 85% of BRMaP Level III and 85% of BRMaP Level IV resources.	The No-Action Alternative does not specifically designate land for Preservation.
7	CULTURAL RESOURCES						
8	Religious Sites	Cultural resources and religious sites associated with basalt outcrops such as Gable Butte and Gable Mountain would be protected.	Same as the Preferred Alternative.	Same as the Preferred Alternative.	Cultural resources and religious sites associated with basalt outcrops such as Gable Butte and Gable Mountain would be protected by Plan Policies and Procedures.	Same as the Preferred Alternative.	Cultural resources and religious sites associated with basalt outcrops such as Gable Butte and Gable Mountain would be protected by CRMP Plan Policies and Procedures.
9	Viewsheds	Mining and industrial development could occur within viewsheds from high promontories.	Area that could be developed within viewsheds is smaller than for the Preferred Alternative.	Viewsheds would be protected. Impacts would be less than for the Preferred Alternative.	Development could occur within viewsheds to a greater extent than for the Preferred Alternative.	Same as Alternative Two. Less than the Preferred Alternative.	Development not precluded at any location. Greater than for the Preferred Alternative.
10 11	Natural Resource Gathering Areas	Damage to natural resource gathering areas from development and increased recreational use of the Columbia River.	Less than the Preferred Alternative.	Impacts to natural resource gathering areas would be minimal.	Damage to natural resource gathering areas from development, increased recreational use of the Columbia River, and grazing.	Less than the Preferred Alternative.	Greater than the Preferred Alternative.

Table 3-4. Summary of Potential Impacts to Hanford Site Resources. (8 pages)

	Resource	Preferred Alternative	Alternative One	Alternative Two	Alternative Three	Alternative Four	No-Action Alternative
1	Cultural Sites	Damage to cultural sites from development. Increased access to the Columbia River could result in damage from artifact collection, vandalism, and erosion.	Less than the Preferred Alternative.	Commercial grazing would not be allowed and impacts to cultural sites from development would be minimal. Access to the Columbia River would not be increased.	Impacts to the Wahluke Slope and White Bluffs only. Damage to cultural sites on the Wahluke Slope from agriculture (including grazing), and could lead to loss of the White Bluffs.	Less than the Preferred Alternative. No grazing would be allowed.	Greater than the Preferred Alternative.
2 3	Salmonid Spawning Sites	No impact to salmonid spawning sites.	No impact to salmonid spawning sites.	No impact to salmonid spawning sites.	Increased sediment loading from White Bluffs irrigation sloughing, and grazing could damage salmonid spawning sites.	Same as Alternative Two.	Between Alternative Three and Preferred Alternative.
4	AESTHETIC RESOURCES						
5 6	Viewsheds	Viewing locations associated with Gable Butte and Gable Mountain would be protected. Locations associated with the Columbia River would be disrupted. Viewsheds could be disrupted.	Same as the Preferred Alternative.	Minimal impacts; less than the Preferred Alternative.	Viewing locations associated with basalt outcrops could be adversely impacted, but locations along the river would be protected. Viewsheds could be disrupted.	Viewing locations would be protected. Minimal impacts to viewsheds. Less than the Preferred Alternative.	Viewing locations and viewsheds could be adversely impacted. Greater than the Preferred Alternative.
7 8	Ambient Visibility	Visibility could be impacted by releases of fugitive dust from construction sites and pollutants from new industrial sources.	Similar to, but less than, the Preferred Alternative.	Minimal impacts; less than the Preferred Alternative.	Greater than the Preferred Alternative.	Less than the Preferred Alternative.	Greater than the Preferred Alternative.
9	Ambient Noise	Blasting, industrial sites, and increased use of motorized water craft could increase noise levels, disrupt wildlife, and detract from recreational experiences.	Less than the Preferred Alternative.	Minimal impacts; less than the Preferred Alternative.	Greater than the Preferred Alternative.	Less than the Preferred Alternative.	Same as the Preferred Alternative.

Table 3-4. Summary of Potential Impacts to Hanford Site Resources. (8 pages)

Resource	Preferred Alternative	Alternative One	Alternative Two	Alternative Three	Alternative Four	No-Action Alternative
1 2 3 SOCIOECONOMICS AND INDUSTRIAL DEVELOPMENT	15,335 ha available for industrial development, which would meet the need forecasted by the Benton County Planning Department and provide ample area to support possible future DOE missions. This amount of land would support employment of 1,000 or more.	2,542 ha available for industrial development, which would meet the forecasted need and provide 1,615 ha for possible future DOE missions. This land could support employment of 100 to 1,000.	1,830 ha available for industrial development, but much of the land is already developed. Would not provide sufficient vacant land to meet Benton County's estimated future needs or provide for possible future DOE missions. Employment limited to less than 100.	17,860 ha available for industrial development, which would meet the need forecasted by the Benton County Planning Department and provide ample area to support possible future DOE missions. This amount of land would support employment of 1,000 or more.	6,882 ha available for industrial development, meeting the estimated future need and providing land for future DOE missions. This land could support employment of 100 to 1,000.	Facility planning and siting conducted on a project-by-project basis as guided by the 1996 <i>Hanford Strategic Plan</i> . At least 22,534 ha available to support future Industrial or Research and Development DOE missions
4 5 RESEARCH AND DEVELOPMENT	4,912 ha designated for Research and Development could support up to 300 employees.	414 ha designated for Research and Development, but limited to previously developed areas.	Research and Development limited to 699 ha of existing uses at LIGO and the K Reactor water supply used for fish rearing.	Greater than the Preferred Alternative 8,177 ha designated for Research and Development could support up to 600 employees	4,388 ha designated for Research and Development could support up to 300 employees	Facility siting conducted on a project-by-project basis. Ample land available. At least 22,534 ha available to support future Industrial or Research and Development DOE missions
6 7 GRAZING AND AGRICULTURE	No lands designated for grazing or cultivated agriculture.	No lands designated for commercial grazing or cultivated agriculture.	No lands designated for commercial grazing. Cultivated agriculture would not be allowed.	1,059 AUM with a value of \$12,700. Cultivated agriculture could generate from \$16 to \$88 million in additional revenue depending on the scenario.	No lands designated for grazing or cultivated agriculture.	Lack of a plan may discourage multiple use of Hanford lands and grazing and agriculture would be considered under individual proposals. Lands permitted for grazing could support 1,655 AUM with a value of \$19,900. Cultivated agriculture would be allowed.
8 9 10 MINERAL RESOURCES (Privately Held)	Existing natural gas claims could be developed, but the Preservation designation in the surrounding area would preclude construction of an access road.	Same as the Preferred Alternative.	Same as the Preferred Alternative.	Existing claims could be developed and access roads could be constructed. Additional development of natural gas could be encouraged.	Same as the Preferred Alternative.	Existing natural gas claims could be developed and access roads could be constructed.

Table 3-4. Summary of Potential Impacts to Hanford Site Resources. (8 pages)

	Resource	Preferred Alternative	Alternative One	Alternative Two	Alternative Three	Alternative Four	No-Action Alternative
1	RECREATION	Increased recreation could increase revenues generated by tourism.	Less than the Preferred Alternative.	Less than the Preferred Alternative.	A destination resort/conference center at Vernita Terrace could generate up to \$2 million to \$4 million in payroll.	Less than the Preferred Alternative.	New revenue generating recreational opportunities would be unlikely.
2 3	ENVIRONMENTAL JUSTICE	Increased access to the Columbia River would potentially increase exposure and health risk. Minority or low-income populations may be more prone to adopt a subsistence lifestyle, but a particular population would not necessarily be affected.	Because the purpose of a Federal Wildlife Refuge is to conserve native ecological systems, consumption of those systems would be limited and therefore provide better protection from contamination than the Preferred Alternative.	Access to the Columbia River would be limited. No disproportionately high and adverse impacts would occur.	Same as the Preferred Alternative.	Same as the Preferred Alternative.	Same as the Preferred Alternative.
		Areas of cultural value to American Indians would be protected, but development would be allowed within the viewscape of some of those areas.	Same as the Preferred Alternative.	Same as the Preferred Alternative, but viewsapes would also be protected.	Areas of cultural value to American Indian Tribes could be developed and development could occur within culturally significant viewsapes.	Same as Alternative Two.	Same as Alternative Three.
		Economic development of Hanford Site lands would be neutral in low-income and minority communities within the assessment area.	Limitation on development could adversely impact low-income populations. However, local low-income populations are not greatly influenced by Hanford Site spending.	Same as Alternative One.	Same as Preferred Alternative.	Same as Preferred Alternative.	Same as Preferred Alternative.
		Prohibiting agriculture on the Wahluke Slope would not change the current condition.	Same as the Preferred Alternative.	Same as the Preferred Alternative.	Agriculture would be allowed on the Wahluke Slope, potentially benefitting low-income and minority populations..	Same as the Preferred Alternative.	Same as the Preferred Alternative.

Table 3-4. Summary of Potential Impacts to Hanford Site Resources. (8 pages)

Resource	Preferred Alternative	Alternative One	Alternative Two	Alternative Three	Alternative Four	No-Action Alternative
1 HUMAN HEALTH	Increased access to Hanford Site lands would increase the potential for health risks.	Less than the Preferred Alternative.	Access to Hanford would be limited and the potential for health risks would be minimized.	Greater than the Preferred Alternative because of the intensity of use.	Less than the Preferred Alternative.	Access would be restricted and risks would be less than for the Preferred Alternative.
	New developments on the Hanford Site could lead to an increase in occupational injuries and fatalities associated with mining and industrial activities.	Less than the Preferred Alternative.	Much less than the Preferred Alternative.	Greater than the Preferred Alternative and would have the additional risk of occupational injuries from agriculture.	Less than the Preferred Alternative.	Potentially greater risk than for the Preferred Alternative.
	Increased recreational activities could increase the risk of injury from recreational accidents.	Less than the Preferred Alternative.	No increase in recreational use and the risk of recreational accidents would be minimized.	Greater than the Preferred Alternative.	Less than the Preferred Alternative.	Minimal increase in recreational use. Risk of recreational accidents would not increase.
2 HUMAN HEALTH	Remediation to an Industrial standard in the 300 and 200 Areas would involve less remediation worker risk from hazardous materials exposure and cumulative equipment operation time than some of the CRCIA scenarios could require for non-industrial uses. Actual remediation scenario will be picked through the CERCLA/RCRA process which could require more or less remediation based on the scenario chosen.	Minimum Industrial development could require more remediation worker risk exposure than Preferred Alternative.	Minimum Industrial development could require the most remediation worker risk exposure.	Maximum Industrial development could require the least remediation worker risk exposure.	Industrial development between Alternative One and the Preferred Alternative.	Minimal increase in changes of land use from open space reserved designation. The validity of an Industrial remediation scenario could be questioned without an integrated GMA Industrial designation. Actual remediation scenario will be picked through the CERCLA/RCRA process which could require more or less remediation based on the scenario chosen.

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